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THE TEACHING OF OTO-LARYNGOLOGY IN UNDER- GRADUATE AND POST-GRADUATE MEDICAL SCHOOLS.*

BY S. MACCUEN SMITH, M. D., PHILADELPHIA.

The quarter of a century just passed has witnessed a wonderful change in the curriculum of medical schools, both graduate and post-graduate. This period has seen not merely the development of many of the older sciences and methods, but the institution of new and previously unknown branches. A two-year course was soon found to be inadequate in which to teach—much less to acquire—the necessary fundamental facts. Three years, then four and now it is a mooted question whether five years are not essential in which to teach a student what is necessary for his proper equipment. Studies heretofore unknown, such as bacteriology, serum therapy and serum diagnosis, radiography, and many others are a part of the training of the modern medical student, not to speak of a working knowledge of the many specialties. Such a development has had its influence in at least two ways,—first, a longer course of study has been found pre-eminently necessary, and secondly, students of a higher grade of preliminary education are needed to meet these progressive requirements.

It is not expected that the undergraduate medical school will turn out specialists. Indeed, this is unwise as well as impracticable, for a specialist is the natural development of a long course of subse-

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quent study, observation and investigation. He is the evolution of special knowledge applied to a given focus; for modern scientific medicine has shown, if it has shown anything, that the human body, while apparently composed of many parts, is a correlated whole, each part dependent not merely upon adjacent structures but vitally influenced by the diverse organs, tissues and fluids of the body. It seems hardly necessary to call attention to the relation between albuminuric retinitis and nephritic disease, pathologic changes in the organ of hearing and paralysis of the seventh nerve, nasal abnormalities and asthma, diabetes and pancreatic disease, etc.; such dependence necessitating not merely a knowledge of certain structures, but of the anatomy, physiology and chemistry of the entire organism.

It has been only within the past few years that an effort has been made in any of our colleges to systematize the teaching of specialties to the undergraduate. Formerly it was thought sufficient to give one clinical lecture a week for only a part of the college year, without any bedside or dispensary instruction, and this only in ophthalmology. Needless to say, the graduate of that period learned little or nothing of the special branches by such desultory instruction. Indeed, many of them were taught, in a very superficial way, by the chairs of general medicine and surgery. In the majority of our institutions it was not until both the student body and the public demanded better facilities for the instruction of the undergraduate in the specialties, that changes were made, and even in the face of this demand, the evolution has been a slow one.

An important question for consideration is whether the student is prepared to receive instruction in the special branches before his senior year. In some institutions the specialties are taught in the junior year. I am strongly of the opinion, however, that in all our colleges the senior year should be devoted almost if not wholly to clinical instruction, the exemplification of the broad principles of general medicine and surgery occupying the first three years.

The question as to whether the teaching of the special branches in which we are interested should be entirely clinical, or part clinical and part didactic, is one of much importance. It may be necessary for the proper elucidation of some subjects to deliver a few didactic lectures, but on the whole the student will, I believe, absorb more information from clinical demonstrations than would be possible by didactic teaching alone. This point is well illustrated, for instance, in the method of using reflected light in demonstrating

the normal state and pathologic lesions of the cavities and parts included under the term oto-laryngology.

Of late the amount of work thrust upon the medical student in the majority of our institutions is almost overwhelming, and I believe that we, as teachers in the special branches, should endeavor to so systematize our course of instruction that the student will be enabled to acquire a thorough working-knowledge of the subject with a minimum expenditure of time and energy, always keeping before us the primal fact that we represent only a part of the broad domain of medicine, and as our object is to aid and co-operate in the development of a well-rounded medical man, we should exact of the undergraduate only the essentials. In other words, we must not lose sight of the fact that the basic principle upon which a broad medical education rests is the same to-day as in years gone by, and is founded on physiology, anatomy, pathology, chemistry, biology, general medicine and general surgery, without a proper knowledge of which the superstructure of the special branches could never exist. From this broad foundation have grown the various specialties, which to-day are not only well recognized but firmly established and indispensable.

The development of a specialist in so far as his instruction is concerned must be along entirely different lines from those followed in teaching the undergraduate, and can only be properly given in a post-graduate course.

In post-graduate work, the teaching should be governed by the desire of the student either to become a specialist in his chosen field, or merely to acquire such knowledge as is necessary to better fit himself for the general practice of medicine. While this post-graduate instruction in oto-laryngology has been of great value in helping to develop a well-informed general practitioner, some harm has resulted from the more or less superficial knowledge that this limited instruction gives, since after a short course in a post-graduate school, some have unfortunately felt themselves sufficiently skilled to specialize in the subject. This, no doubt, has made both the general practitioner and the public somewhat skeptical as to the actual value of the special branches, owing to this obviously insufficient training.

After all, we, as practitioners of medicine, are striving toward the betterment of our patients, and this in many instances can only be accomplished by the co-operation of the specialist and the practitioner of general medicine. In some instances the former is of the utmost value to the latter, and just as frequently the specialist

must turn to the internist for advice and counsel; otherwise many local manifestations of general disease could not be properly interpreted and would, therefore, be ineffectually treated. Much has been written about the value of specialism in its relation to general medicine. This is undoubted, and its importance is constantly becoming more manifest. On the other hand, we must not forget our debt of gratitude to general medicine, without which we would fail to relieve a goodly number of our patients. Note the importance of disturbances of the labyrinth, as well as of the upper respiratory tract, in their relation to diseases of women, affections of the kidneys and alimentary tract, and many constitutional diseases, of which syphilis in its various manifestations is probably the chief example. In other words, the more the undergraduate, as well as the post-graduate, is brought to a realization of the value of the special branches and their inseparable relation to general medicine, the sooner will co-operation among all branches of medicine be realized, resulting in an undoubted, betterment in the health of the human race.

Owing to the general ignorance of this subject no longer than twenty years ago, oto-laryngology considered as a special or separate study was treated by the medical profession with actual scorn. This was notably true of otology. Within the last two decades, however, no branch of surgery has made such marked advance, thanks to the scientific research of Politzer, Gruber and others. So long as these special branches are elective in our undergraduate colleges, it is doubtful whether it will be possible for us to graduate men much better equipped than formerly, as well-rounded practitioners of medicine, in which a knowledge of oto-laryngology must be an important factor. Regardless of statements to the contrary, the fact remains that unless students are compelled to attend lectures and pass an examination on the special branches, they are almost sure to neglect the same and put their time on subjects that count in the finals; hence the fundamental principles of oto-laryngology should be required, as it is only by such means that the mistakes of the past can be avoided. This, however, will never be accomplished unless efficient and practical instruction is given and the student required to pass an examination on the subject. In the words of Dr. Gradenigo: "What doctors need in their daily practice should be made compulsory without expecting them to be familiar with complicated examinations and operations." This is as true of oto-laryngology as of ophthalmology or indeed of any other special department of medicine. Unless the undergraduate is

drilled in the subject of otology, and more especially in the relation of the ear to systemic conditions, we shall continue to turn out a type of practitioner who will fail to recognize aural complications until his attention is called to a discharge escaping from the external canal. The sentiment was expressed by Dr. Edward H. Clark, of Boston, that "a physician who fails to examine the ears of a child during the course of one of the acute exanthemata may justly be called an unscrupulous practitioner," and to these exanthemata might be added such infectious diseases as influenza, pneumonia and typhoid fever. An aural complication in the course of one of the latter diseases frequently causes a rise of temperature, which is usually attributed to a relapse from auto-infection, whereas an immediate examination of the ear would have revealed the actual cause of this systemic disturbance, which occurs so frequently during convalescence. Not to anticipate a condition of this kind is certainly evidence of unjustifiable neglect, especially when we consider the predisposition to meningeal complications in young subjects. But even accepting this statement as proper practice, it would be absolutely impossible for a physician to recognize a diseased condition, even if looked for, had he not been properly instructed in the special branches, and to obtain this needed training, compulsory attendance and examination, as above stated, are a *sine qua non*.

In accepting the invitation of our secretary to prepare this paper, it was necessary, in order to make the subject-matter somewhat comprehensive, to obtain a resumé of the methods of teaching in many of our leading institutions; consequently I take pleasure in reading the reports furnished me by the chairs of those institutions. A few have failed to comply with my request for data on the subject.

DR. CLARENCE JOHN BLAKE, Harvard, Otology.

In addition to the regular lectures which cover two addresses on methods of examination, preliminary to the clinical work in otology, review lectures upon the anatomy and physiology of the ear, and a subsequent course of about twenty lectures on diseases of the ear, we have a set of boxes containing duplicate sections of the temporal bone, with an accompanying descriptive pamphlet, which is placed in the hands of the students. In sections, for a week at a time, each section being given at the close of the week a quiz of about two hours upon the subjects of the study of the preceding week.

The clinical instruction is given mainly in a large aural clinic, with abundant material and, under the present arrangement, the class being divided into sections of not more than four men, each section has two

hours of practical instruction per diem for one week; this being supplemented by a review and an examination covering the work done and determining, as far as may be, the amount of information acquired during the week of clinical instruction, upon which each student is marked upon a basis of forty per cent, the marking of the remaining sixty per cent being reserved for the written examination at the end of the third year.

In the fourth year otology is an elective study, and an increasing number of men are taking up clinical work in that year, especially since the introduction of the so-called quarter courses of one month each, during which time the student is practically acting as an assistant in the aural clinic. Students wishing to study otology still further are given appointments as clinical assistants for periods ranging from three to eighteen months.

DR. HARRIS P. MOSHER, Harvard, Laryngology.

The compulsory teaching of laryngology at the Harvard Medical School is confined to the second half of the third year. The entire class receives twenty-four lectures. For practical instruction in the various hospitals, the class is divided into small sections. Each section receives twelve demonstrations, in which the student is made familiar with examining instruments, normal appearance, and the commoner diseases of the nose and throat. Three lectures a year are given the juniors by a dentist connected with the department of laryngology. An examination in the subject is held at the end of the third year.

The elective course in the subject consists of two parts—half courses in the forenoon throughout the year at the Massachusetts General Hospital, which are chiefly clinical in character. The student observes the routine of the clinic and receives instruction in diagnosis, treatment, applied anatomy and pathology, and an opportunity is given to assist at operations.

The second part consists of teaching the pathology of the nose and throat, and sections and specimens stained and mounted are retained by the student. One dental demonstration a week for two months is given the fourth-year men who elect laryngology. There is a sub-department of bacteriology in connection with the department of laryngology, where particular attention is paid to vaccine therapy.

A practical or written examination is held at the end of the course, and the student's daily written record of work is also placed to his credit.

DR. EDWARD B. DENCH, University and Bellevue Hospital Medical College, New York. Otology.

My instruction in otology at the University and Bellevue Hospital Medical College consists of one didactic lecture each week, for a period of five months. These lectures are freely illustrated by means of charts and diagrams, blackboard drawings and models, as well as wet and dry anatomical specimens. I have, in particular, one large model, which was built largely by myself, upon which can be delineated most of the pathological conditions in the middle-ear and external auditory meatus. I have found it necessary to give a regular course of lectures in order to

systematize the work. In addition to these lectures, the class is divided into sections of twelve men each, and each section has practical instruction in the examination of the ear, in the clinic. The material here is so ample that each member of the section is able to see the ordinary cases of acute otitis media which he will observe in his general practice. I also hold an operative clinic at the New York Eye and Ear Infirmary, every Monday throughout the college year, to which the students are invited. In addition to this instruction, the various major operations are demonstrated to the class upon the cadaver, the demonstrations being made before small sections, or before the whole class, according to available time.

My own opinion is that if we teach undergraduates to recognize clearly the importance of an acute or chronic middle-ear suppuration, and familiarize them with the regular routine treatment in these conditions, and also instruct them in the various intra-cranial complications to which these conditions may give rise, we are giving as full a course of undergraduate instruction in otology as can be comprehended by the average medical student. All that we can hope to do is to lay a foundation for instruction in this branch. I believe that any attempt to teach these men to deal with the more complex middle-ear and labyrinthine conditions—especially those which follow a chronic non-suppurative middle-ear inflammation, is a waste of time. Naturally, these conditions should be touched upon, but it seems to me that the points which it is necessary for the young man beginning the practice of medicine to know, so far as otology is concerned, are: (1) The early recognition of an acute inflammation and the ability to treat the same; (2) the importance of recognizing the almost certain serious results of a chronic middle-ear suppuration; (3) the recognition of the various intra-cranial complications which may follow either acute or chronic middle-ear suppuration; (4) the recognition and treatment of diseases of the external auditory canal, particularly with reference to a differential diagnosis between diseases of the canal and the conditions in the middle-ear and mastoid, which may simulate a pathological condition in the external auditory meatus; (5) the proper care to be given to the instruction of those almost or completely deaf.

If we cover these points in our college course, the recent graduates are at least equipped to treat acute conditions and should be sufficiently well trained to seek advice in the treatment of the more serious complications which may follow middle-ear suppuration. I believe it is a mistake to educate these men in the finer points of diagnosis regarding chronic middle-ear inflammations. I have given for the last two years in my instruction the clinical signs of involvement of the labyrinth, and believe that this is of a certain amount of importance. I think it is better, however, to impress upon the men the possibility of such lesions occurring, and to put them on their guard against them, rather than to enter into an elaborate course of instruction as to the exact recognition of the various conditions present. They should know enough to treat the simple cases properly and promptly, and should also know enough to seek advice when the more serious conditions present themselves. The object of the course of instruction is not to make expert otologists of the mem-

bers of the class, but simply to enable them to treat the ordinary conditions of the ear intelligently.

DR. GORHAM BACON, College of Physicians and Surgeons, New York. Otolaryngology.

In the course on otology, sixteen lectures are given, illustrated by lantern slides, to the third-year students.

In the fourth year the class is divided into sections, and attends the Vanderbilt Clinic and the New York Eye and Ear Infirmary. Each student has about a month of this work—three days a week at the Vanderbilt Clinic, one day a week at the Infirmary, and once a week witnessing and assisting at my operations at the Infirmary. Before beginning to operate, I show the students a certain number of patients at the dispensary and in the wards.

DR. JOHN E. SHEPPARD, Long Island College, Brooklyn. Otolaryngology.

From October 1 to February 1, I give one didactic lecture a week. During the same time the class is divided into sections and attends the dispensary, where it is shown the more ordinary conditions and manipulations of the external and middle-ear, under the direction of assistants. During the course two or three mastoid operations are done before the class.

The students are also given the privilege of seeing the patients at the Brooklyn Eye and Ear Hospital, but as a matter of fact, do not avail themselves of this privilege.

DR. EWING W. DAY, University of Pittsburg. Otolaryngology.

The course consists of five lectures to the entire senior class in the amphitheatre. The class is divided into sections of about ten students, and under the direction of assistants, examines and treats patients in the clinic of the Eye and Ear Hospital. There are eighteen hours devoted to this clinic work. About a third of the time I devote to talks on anatomy, physiology, and diseases, illustrating the talks with charts, etc.

In groups of five, the students see two major operations, and each student must examine a new case and write out the pathology, diagnosis (with reasons) and treatment. In the oral and written examination the student must attain seventy per cent.

DR. CHRISTIAN R. HOLMES, University of Cincinnati. Oto-Laryngology.

The course in oto-laryngology in the medical department of the University of Cincinnati includes didactic lectures at the school and clinical demonstrations at the college clinic and at two hospitals.

The didactic course is one lecture a week during the college term. I illustrate these lectures by lantern-slide demonstrations, by passing about the class stereoscopic glass slides obtained in Vienna, and toward the latter part of the term, by demonstrations and dissections on preserved and fresh heads. The clinical material at the Good Samaritan and Jewish hospitals is used by my assistants for teaching purposes, and in this way an abundance of bed-cases in otology, rhinology and laryngology supplies excellent clinical material several hours a week. The surgeons in charge not only lecture and operate in the amphitheatre of the hospitals, but

are privileged to take small classes through the wards and give bedside-demonstrations.

A daily out-door clinic, in charge of instructors, brings the students in direct contact with walking cases, and furnishes many of the patients who are later sent to the hospitals for operation.

The members of the senior class attend operations at my private hospital as often as practicable. By these agencies I believe our students get a most excellent training in diagnosis, medical treatment and operative technic in our specialty.

DR. J. M. INGERSOLL, Western Reserve, Cleveland, Oto-Laryngology.

The students are assigned to the various hospital-clinics of the city during their junior year, and receive some instruction in the methods of examining patients. During the senior year I lecture to or quiz the students one hour each week. In these lectures I make use of sections and anatomical preparations of my own for teaching anatomy, and as I lecture on various diseases I try to have illustrative cases from the dispensary to show them. A record is kept of each man's standing in the quiz hours.

For clinical work the class is divided into groups of three or four, and spend two hours a day in the dispensary for two weeks. Here they are taught to make a methodical examination in the nose, throat and ear, and to describe what they see, rather than to attempt to make a diagnosis. As their proficiency warrants, in the methods of examination, patients are assigned to them for treatment.

At the close of the senior year they stand a final examination, and on this and their work in the dispensary and quiz-classes their record depends.

DR. E. FLETCHER INGALS, Rush Medical School, University of Chicago. Oto-Laryngology.

Owing to illness, Dr. Ingals was unable to give a detailed outline of his course in oto-laryngology. He states that the teaching is nearly all clinical and very little didactic at the present time.

DR. JOSEPH C. BECK, College of Physicians and Surgeons. Oto-Laryngology.

The course in oto-laryngology is given to the third-year students and consists of sixteen didactic lectures to the entire class, and clinical work two hours a week for a period of six weeks, to sections of twelve students.

In the clinic, the students are at first made thoroughly familiar with the anatomy of the ear, nose and throat. The several structures of the nose, pharynx and epiglottis are indicated by the application of a small spot of colored emulsion, a definite color always indicating a particular part. The larynx and ear are not permitted to be manipulated in this way. The men also draw on the blackboard what they see, and are impressed with the importance of being able to convey their findings clearly and exactly. They are also made familiar with the use of the various instruments for examination.

Then follows the presentation of acute cases of ear, nose and throat conditions, with diagnosis, and prevention of complications by a well-accepted mode of treatment. A weekly quiz is held on the work done.

There are other teachers in these branches, and opportunity is given for the students to continue the work with them. Many of them give operative clinics, but these I gave up some years ago. I believe in personal-contact instruction to small groups of students, and in allowing them to see cases after they have learned to recognize structures by the proper use of reflected light and specialists' instruments.

The students are compelled to attend the school-dispensary in groups of ten, daily, for six weeks in every department of medicine; so in this way additional instruction is given them in this subject, as well as in others. If they show especial interest in surgery, I allow them to attend my surgical clinic.

DR. M. A. GOLDSTEIN, St. Louis University. Oto-Laryngology.

Oto-laryngology is taught to the senior class only, as a specialty, two hours a week, throughout the year. The first semester is devoted to lectures; the anatomy and physiology of the ear, nose, accessory sinuses, naso-pharynx, pharynx and larynx being very thoroughly presented, illustrated with charts, diagrams and blackboard drawings. In the last few lectures practical demonstrations on the living patient are given of functional tests and the methods of handling all examination-instruments used in oto-laryngology.

The work of the second semester is almost wholly clinical, consisting of two-hour demonstrations each week before the class, and daily work in the ear, nose and throat clinic for sections of four or five men. Here they learn the use of instruments and apparatus employed in practical treatment.

The method of teaching the surgery and technic of oto-laryngology that I have employed for the past three or four years is somewhat unique and has proven very satisfactory; I know of no other teacher in this field who has adopted this plan for teaching undergraduates in medicine. It consists of permitting four or five students of the sub-section who are at that time assigned to the clinic, to do the simpler operations customary in oto-laryngology, under my personal supervision, in the amphitheatre before the class. The removal of cerumen and other foreign bodies from the ear; the extraction of aural polypi with the snare; the various treatments for suppurative processes in the middle-ear; the incision of furuncles; the removal of adenoids by means of curette and forceps, under local and general anesthesia, or without anesthesia; the removal of nasal polypi; the disposal of hypertrophied or degenerate faucial tonsils, either by tonsillotomy or tonsillectomy, and the technic of topical applications to the larynx, are among the simple surgical procedures that I permit my students to do on clinic-patients before the class. I usually demonstrate these operations and their technic myself and present a second case for the use of the selected student; he does the actual operating and continues the surveillance of the patient, and when called upon, makes his report before the class.

I find that this plan of teaching not only gives the undergraduate, who is soon to see practical service, greater confidence in his ability to handle such special instruments, but it also gives the entire class a good working-knowledge of the conditions which they are most likely to meet in

general practice. I believe it is better to initiate the undergraduate in this way into some of the simpler surgical procedures that he will be called upon to carry out, than to merely refer to them didactically, or to illustrate the different operative technic by personally operating on all of these cases.

In addition to the above, my students assist in giving anesthetics, in mastoid operations, tracheotomies, and the capital operations on the larynx, when these are called for in the clinic.

I devote one lecture to a demonstration of tracheoscopy, bronchoscopy and esophagoscopy, and one to deaf-mutism and the disposal of deaf children.

DR. DUNBAR ROY, College of Physicians and Surgeons, Atlanta. Oto-Laryngology.

This is the first year in the Atlanta College of Physicians and Surgeons that the branch of diseases of the eye, ear, nose and throat has been divided into ophthalmology and oto-laryngology. In this course, which will be changed from year to year to meet the demands of medical education, the men, in groups of not more than eight, work with me and my assistants for one hour a week, doing practical clinical work in the routine of examining patients, making topical applications and watching all minor operations. Any major operations are performed in the amphitheatre with the assistance of the members of this section. The various mastoid and sinus operations are demonstrated to the seniors on the cadaver, to show the students what is meant by these operations, though the opportunity may not be presented for them to see the operation on the living subject.

From January till the close of the session I deliver one didactic lecture per week on these branches, illustrated by charts, etc.

DR. JOHN DUNN, University College of Medicine, Richmond. Oto-Laryngology.

For my lecture hours I require one or two students to be prepared, through study of the text-book, to answer on a given subject such questions as I may think fit to ask. This brings out what they glean from the text-book matter. When I am through quizzing, I lecture on the subject, correcting false impressions and elaborating the topics for the day.

As far as clinic hours permit, the class, in sections, is brought about the operating table and familiarized with the details of the commoner operations. Instruction in the use of the special instruments for examination and quizzing completes the course. The time allowed in the scheme of lectures for the session is, however, altogether too short to make embryo specialists.

DR. CHARLES W. RICHARDSON, George Washington University, Washington, D. C. Laryngology.

The teaching of laryngology in this institution is divided into a didactic and clinical course of lectures. The didactic lectures are twenty-four in number. In this course a thorough grounding is given in the anatomy of the parts, illustrated by wet and dry specimens. It seems essential that the student should have a recent and thorough exposition of this

part of the course, to quickly comprehend the lecturer in the description of the various pathological conditions of the organs under consideration. The mechanical devices for the inspection, diagnosis and treatment of diseases of these parts are explained and their use described. Acute and chronic catarrhal inflammations of the upper air-tract are considered as to etiology, pathology, diagnosis and treatment, and also the specific inflammations, as tuberculosis and syphilis. Sinus affections are taken up, with the more effective methods of relief.

The clinical course is divided into an operative course and a course of clinical demonstrations. The operative course consists of one clinic a week throughout the year, during which the many major operations, as presented, are demonstrated before the class. For clinical work, the class is divided into sections, which present themselves in rotation at the dispensary, four hours a week, throughout the year. Here they are taught the use of reflected light, methods of examination, use of instruments, diagnosis and treatment of diseases and the performance of the minor operations.

The course of instruction is only open to qualified students of the fourth year, and every effort is made to offer a practical course. The teacher recognizes the fact that he is dealing with an undergraduate body, not with a finished product. In other words, he must appreciate the limitations of the student-body and only offer what can be assimilated. It is not our effort to produce specialists in laryngology and rhinology, but a medical graduate who has a good working-knowledge of this department of medicine and is capable of making use of instruments of precision and diagnosis, and of making diagnoses in those forms of special lesions which will come most frequently under his observation as a young general practitioner, and to enable him to recognize how far he may pursue the treatment of the condition and when he should cease to make such efforts.

DR. H. O. REIK, Johns Hopkins. Oto-Laryngology.

I believe that a combination of the old didactic lectures with practical clinical demonstrations will prove to be the most desirable method of teaching oto-laryngology. Whether the instruction shall come in the third or fourth years matters little; at present it seems preferable to put it in the final year, along with most other clinical work. The entire class should attend the lectures, and a series of six to ten lectures of an hour each, given once a week for the period allotted, is sufficient to cover the vitally important part of the subject. The clinical work should be done with the class in sections.

At Hopkins we divide the class into three groups, so that each has a trimester of twelve weeks in surgery, medicine and gynecology, rotating at the end of these periods. Each of these groups is subdivided, and while serving in the surgical class, one subdivision at a time attends the otological clinic for six weeks. The time of work should be an hour daily during that time (unfortunately, I have so far been able to secure only half an hour every other day). I think the first half of this hour can well be spent in a practical clinical talk on the commoner aural conditions, such as the family physician is most likely to encounter, accom-

panied by demonstrations of lantern slides, anatomical specimens, etc., and the remainder of the hour occupied by examination of patients. In so far as possible the patients should be selected to show the conditions talked about that day, and the subject taught in a routine way, from diseases of the auricle and canal to those of the internal ear or brain. All special work, operations, etc., which glorify the teacher rather than benefit the student, should be omitted.

I believe there is a sharp and clear line to be drawn between the specialist and the family doctor and that the latter should, if only for his own sake, observe it. I should avoid cramming him with knowledge for which he has no need, and possibly no desire, therefore, and tell him emphatically what he should not attempt. The man who attempts to do that for which he is not fitted, in surgery, is deserving of severe criticism, but so are we, to some extent, as his teachers, if we do not make the dividing-line so clear as to leave no excuse for crossing it.

DR. B. ALEXANDER RANDALL, University of Pennsylvania. Otology.

In the second year anatomy of the ear is presented by models and lanterns, and physiology by lectures and laboratory work.

The third year men receive instruction in otology during the last half of the year, the course being presented in lectures, demonstrations, occasional clinics and a free use of lantern slides.

In this course they are taught examination by sight and touch, hearing-tests, and diseases of the external, middle and internal ear, with their complications.

In the fourth year the class, in sections of ten or twelve men, receives practical instruction in the dispensary or operating room, one hour a week, for a period of eight weeks. Here the students are familiarized with the use of examining instruments, with normal conditions of the ear, applied hearing and functional tests, diseases of the ear and mastoid process and their treatment. Attendance in this course is registered and absences not made up detract from the student's mark in surgery. Questions on otology are asked in the final surgery examination, but no examination is now given by the chair in otology. Some hours are free for elective work, and this time is made use of by a few of the men in term and more in vacation, but the course is not yet at all satisfactory to me, and it is not possible to present to every student the fairly complete course laid out. I try to teach each man that for which he is likely to have practical need; but radical tympano-mastoid exenterations and other absolute specialist-matters I do not often bring before the class except didactically, that they may know what such operations are.

DR. CHARLES P. GRAYSON, University of Pennsylvania. Laryngology.

The teaching of rhino-laryngology in the university begins in the student's third year. The clinical professor of laryngology delivers a course of fifteen lectures, in which he attempts to cover the essentials and the more practical portion of this special field. The anatomy of the upper air and digestive tracts, particularly that having pathological and surgical importance, is reviewed and the general etiology and pathology of the catarrhal processes are dwelt upon with particular emphasis in order

that his comprehension of the special disease-conditions, subsequently studied, may be the more clear and complete. The teaching in the fourth year is almost entirely clinical. The class visits the out-patient department in sections of tens, and each of these sections receives from eight to ten hours' instruction. The hazards of a purely clinical diagnosis are repeatedly demonstrated and the student is impressed with the wisdom of frequent recourse to the collateral aid of the laboratory. Subsections of three men each are alternately taken to the operating room and drilled in the technic of nose and throat surgery.

It is manifestly impossible in the limited time that the curriculum can afford us, to give the student so extensive a knowledge of the theory and practice of rhino-laryngology as to qualify him for this special work either immediately upon or even soon after his graduation. I think, indeed, that this would be as unwise as it is impossible. The purpose of the school of general medicine is certainly not to graduate specialists. On the contrary, at probably most of these schools it is customary for the student to be warned against the folly of devoting himself to the study of a specialty until he has spent some years in the practice of general medicine. It is because I regard this as excellent advice that I am not one of those who advocate an increase in the amount of time that is now allotted to the teaching of the specialties in the course of general medicine. Without a lengthening of this course, more time for the specialties would necessarily mean less time for the fundamental branches. There can be no question that the specialties demand additional years of study, a prolonged period of diligent clinical work, and the attainment of a much greater refinement of therapeutic technic than is essential for success in general medicine or surgery. The specialties are in no need of the hollow dignity of full professorships in the faculty of medicine nor of the power to reject the candidate for the doctorate degree. Theoretically, I think there is no justification for the placing of this power of rejection in the hands of the teacher of a specialty. It might, perhaps, never be abused, but there should be no possibility of it, and it seems to me that the prestige of both the specialty and the specialist, instead of being increased by such fictitious honors, is really lowered to the level of the commonplace.

DR. D. BRADEN KYLE, The Jefferson Medical College. Laryngology.

In the Jefferson Medical College, laryngology, as well as all other special branches, is a full faculty position and the senior student is required to pass a final examination before graduation.

The undergraduate teaching is limited to the senior year of the four-year course. The instruction consists of one clinical lecture each week during the entire eight months' course. In these clinical lectures the special diseases are taken up systematically, the etiology, pathology, symptomatology, diagnosis, prognosis, complications and treatment are given in full. Special attention is given to the pathology of the various lesions of the mucous membrane of the upper respiratory tract. At least one-half of the thirty-two lectures are devoted to the consideration of general and systemic conditions which produce local manifestations of the mucous membrane of the upper respiratory tract.

The practical instruction is carried out in the out-patient department and nose-and-throat operating room of the hospital, by a corps of assistants, and the class is divided into sections of ten men, each section receiving two demonstrations of two hours each per week, for a period of four weeks.

In these practical demonstrations, the student is first instructed in the use of reflected light and the instruments for examination of patients, and is familiarized with the normal condition of the nose and throat, after which the various pathological conditions are demonstrated and the student is required to examine the patients. The different operations, including direct laryngoscopy, bronchoscopy, etc., are done before the sections and the student is required to give anesthetics and assist with the operative work.

DR. S. MACCUE SMITH, The Jefferson Medical College. Otolaryngology.

In the Jefferson Medical College the chair of otology is a full-faculty position, as are all the special branches, in which the senior student is required to pass a final examination before graduation. The course consists of a series of clinical lectures delivered to the senior class by the professor once a week throughout the term. In these lectures he covers virtually the entire field of otology, beginning with the examination of the patient and ending with intra-cranial complications of aural disease, always laying particular stress on the subjects with which he feels the general practitioner should be familiar, more especially acute aural lesions complicating the exanthemata and other systemic diseases, all of which are illustrated and further emphasized by instruction in the out-patient department and wards. Some parts are passed over lightly and others are merely mentioned, as their more thorough study belongs to the realm of post-graduate teaching. At these lectures are presented dispensary patients whose cases illustrate the subject-matter of the didactic discourse, and a syllabus of the day's lecture is written upon the blackboard. This not only gives the student the proper headings for his notes and furnishes him with a means of quick review, but it insures recording the sub-divisions in proper sequence, allowing no chance of overlooking the more important points.

The senior class, for instruction in all departments, is divided into twelve sections. Each section receives two hours of personal instruction in clinical work per week for a period of four weeks, in the dispensary, at the bedside or in the operating room, making eight demonstrations in which the student comes into personal contact with the patient. The beginning of the sectional course is devoted to a review of the anatomy, physiology and pathology of the organ of hearing, and these demonstrations are properly illustrated by various charts, models and specimens.

Having ample clinical material, the students are first required to note normal conditions and are then given every opportunity to observe most of the acute aural diseases, to recognize and remove foreign bodies, and to practice incision of the membrana tympani, which is now greatly facilitated by the use of the artificial drum-head, as devised by Friedenwald, of Baltimore, for use in Bacon's schematic model of the ear. The student can practice with this until he is able to direct his knife in the proper

manner, a feat which is not easy of accomplishment until he has familiarized himself with the use of the head-mirror and reflected light. Each section of the class is required to see and participate in at least one simple and one radical mastoid operation.

DR. HERBERT L. BIRKETT, McGill University, Montreal. Oto-Laryngology.

The course of medicine in McGill University is one of five years, the teaching in oto-laryngology being confined to the fourth and fifth years and purely clinical in nature. During the fourth year the students are taught anatomy of the ear, nose, throat, accessory sinuses, and mastoid process, this study being very thoroughly illustrated by charts, models, etc.; also the use of instruments for examination of the ear, nose and throat, functional tests, and recognition of normal conditions. This work is carried out in groups of not more than six men, the clinics being held twice a week, from October to June.

Being conversant with anatomy, use of instruments, and normal conditions, at the beginning of the fifth year the students are ready for the consideration of pathological conditions. The student must first describe what he sees in the clinical material presented, and this same material is made the subject of a lecture. These clinics are held twice a week throughout the session. The beds in the ward are also used for clinic purposes. Instruction is given in the education of the deaf, and the students are taken to the public institutions for these unfortunates to observe the methods employed. At the end of the fifth year the men must undergo a written and practical examination in oto-laryngology, in order to qualify for their degree.

DR. D. J. GIBB WISHART, University of Toronto. Oto-Laryngology.

In the University of Toronto, oto-laryngology is presented in a course of ten didactic lectures by the respective professors in each branch, and by clinical work. For this clinical work the senior class is divided into sections, and each man is taught the use of reflected light and to recognize the normal structures. The clinical material is used to illustrate the usual diseases met in these branches of medicine, from the simpler to the more complex, as far as possible, and a few of the simpler operations are demonstrated before the whole class.

The object is to make the student use his head-mirror as he does his stethoscope, and not in any way to encourage specializing. The subject is compulsory to the whole final class, and is completed by a written examination.

Next year the work in these branches will begin in the fourth year, including use of head-mirror, examinations on normal structures, etc. the didactic lectures and clinical work on pathological conditions being given to the seniors, as now.

PROF. DR. G. ALEXANDER, University of Vienna. Otology.

The necessity for instruction in otology for the undergrade medical student is to-day beyond question. Especially do the serious endo-cranial complications of otitic origin call for a real knowledge of otitic diseases and the regular and clinical otoscopic examination of the ear on the part of surgeons and internists.

At my clinic I teach the normal and pathological anatomy, with demonstrations of macroscopic and microscopic specimens. Some knowledge of the histology of the inner ear, as well as of the central ramifications of the eighth nerve, is necessary for the proper understanding of functional tests. Study of nystagmus depends especially upon the knowledge of anatomical construction of the vestibular apparatus and the semi-circular canals and of the nerve endings contained therein.

In the clinical study of cases the student is taught the use of the mirror and reflected light, functional tests, and the etiology, symptoms, differential diagnosis and treatment of cases presented. After functional methods of the auditory apparatus are demonstrated, the examination of the static labyrinth is comprehensively given. In all the classes cases of deaf-mutism are demonstrated, and visits are made to the Imperial Deaf-Mute Institute, where the students observe the different methods of teaching such children.

In the surgery of the ear and endo-cranial complications, the diagnosis is very thoroughly entered into, and the students are given an opportunity to assist in the operations and to follow the after-treatment of the surgical cases. Especial stress is laid on the after-treatment of simple mastoid operations.

The course is one semester, of five months, three hours a week. Some operations are demonstrated on the cadaver, and the more advanced students perform mastoid operations on the cadaver.

PROF. GUSTAV KILLIAN, Freiburg im Breisgau, Germany. Laryngology.

Students are compelled, by order of the state, to take a practice-course in the methods of examination in rhino-laryngology during one semester, and in the second semester to attend the clinics and practice-hour. During the latter period the student must examine patients, under the direction of the teacher, and make his own diagnosis.

I arrange the course so that in one hour our methods of examination and everything pertaining to the subject are discussed and demonstrated. A second hour is intended for practical work by the student. Each patient is examined by all the students attending the clinic, the patients receiving a small fee for their attendance for the students' benefit. Especial emphasis is laid on diagnosis. There is very little time for practice in operative work. Anyone who wishes to continue laryngology further must try to obtain an assistantship. An assistant must remain two years in our branch, and for special work in diseases of the ear, a further two years.

DR. HEINRICH NEUMANN. Vienna. Otology.

Students are divided into two classes, those who are to practice general medicine and wish a sufficient grounding in otology to enable them to recognize otitic diseases in this general work; and those who wish to specialize in otology and take the course to perfect themselves for the work.

Beginners take a course of two months, one hour daily. I take up osteology and anatomy of the temporal bone, examination by tuning-fork, acute otitis media and the acute catarrhs, and the indications for the

different operations. I go into differential diagnosis of the intra-cranial complications, and lay special stress on the differentiation of intra-cranial complications of typhoid, malaria, tuberculous meningitis, endemic meningitis, uremia and diabetic coma.

Each student must be able to explain pictures of the tympanic membrane, to catheterize and incise, and they also assist me at some of my operations.

The students wishing to specialize in otology take a six months course, two hours a day. These men practice all ear operations on the cadaver until they can perform them perfectly and independently; only then are they allowed to practice on the living subject, under my direction.

I insist upon the minutest detail in examination by tuning-fork. All intra-tympanic operations, including removal of the lateral attic, are practiced on the living subject. I read the histo-pathology of the nose, larynx and ear, and they must prepare themselves all the necessary slides.

The course is closed by having each student work out scientifically an interesting case given him in a publication or a lecture.

DR. THOMAS BARR, Glasgow University. Otology.

Attendance in the course in otology has been optional, but is compulsory beginning with this year. The plan is to give ten lectures, partly demonstrations, and ten clinics at the hospital for practical personal instruction, the class being divided into sections of fifteen for the clinic work. A willing student in this way gets a fair foundation, upon which he can build afterwards.

DR. WENDELL PHILLIPS, New York Post-Graduate. Oto-Laryngology.

In the regular course the student works with the patients at the daily clinic, under instruction. There are also three special courses.

1. Work on the cadaver, or operative surgery, in which the student sees the major operations performed, then assists, and later does the operations himself. In this he gets a good working-knowledge of anatomy as it relates to aural surgical procedure. The course includes removal of foreign bodies and exostoses from the canal, the various mastoid, plastic and tympanic operations, and the operative treatment of mastoid complications.

2. The second course is on the living subject, and is restricted to those students who have qualified in the cadaver course. The student is allowed to do the minor surgical procedures, and under direction of one of the aural surgeons he will perform at least one simple mastoid operation and attend to the after-treatment.

3. The third course is on the labyrinth, and consists of systematic instruction by lecture, followed wherever possible by actual demonstration on the patient. Here are also included the various tests for hearing, and the labyrinthine tests. The labyrinth operation is demonstrated on the cadaver.

DR. ROBERT C. MYLES, New York Polyclinic. Laryngology.

During the last twenty years I have experimented with almost every method of teaching and post-graduate work at the New York Polyclinic. As our pupils have had but very little ante-graduate teaching, we are

handicapped in our post-graduate work. In my very active days I taught them anatomy (practical) and also the gross pathology. I used cadaver-teaching in conjunction with the clinical demonstrations, and from this attained the best results. When students have shown sufficient proficiency, we have allowed them to do operations, under the direction of the staff. This is always a dangerous and hazardous procedure on account of the laws of the American states. Physicians from the great states of Massachusetts and Pennsylvania are not allowed to operate in the state of New York without a license.

Post-graduate teaching in America is very unsatisfactory.

DR. JOSEPH H. ABRAHAM, New York Polyclinic. Laryngology.

Graduate students are given a course on the anatomy of the nose and throat and an operative course on the cadaver; they are taught the use of instruments for examination on the living patient, and treat patients for minor diseases. There are also examinations of patients, with lectures, especially for diagnosis. Then follow the minor operations, and as many of the major ones as the skill of the student will warrant. The great drawback is that the student-doctors devote too little time to the work. They want to see operative demonstrations and pay too little attention to diagnosis and simple treatment of patients.

DR. WALTER ROBERTS, Philadelphia Polyclinic. Otology.

There are separate six-weeks courses in the several special branches, but most of the students take the general eye, ear, nose and throat course, lasting three months.

The otological teaching is almost wholly clinical, covering the ground as thoroughly as possible in the time allowed. An operative course on the cadaver is given to familiarize the men with the anatomy of the ear and the operative procedures thereon.

It is the object of the staff to make the course as practical as possible, beginning with the usual preliminary training when required, and devoting more time to advanced instruction when the students' knowledge of the subject warrants it. All students are given a chance to acquire manual dexterity by the actual treatment of patients.

DR. ARTHUR W. WATSON, Philadelphia Polyclinic. Laryngology.

The teaching of diseases of the nose and throat at the Philadelphia Polyclinic is mostly clinical. Formerly didactic lectures were also given, but it was found that the students were not sufficiently interested to make it worth while to continue them; hence they were abandoned.

Operations on the accessory sinuses, larynx, etc., including tracheotomy, intubation and bronchoscopy, are demonstrated on the cadaver, and there are demonstrations of anatomy and pathology.

The teaching in the clinic is personal, the student being taught examination and diagnosis on the living patient, watching the instructor or having the instruments in his own hands. When more advanced, the student is allowed to treat cases and do the minor operations, under guidance of an instructor. Operations under general anesthesia are done before the class in the amphitheatre, and here also each student is given opportunity to follow the steps of the operation.

DR. G. HUDSON-MAKUEN. Deaf-Mutism.

The following are some of the points which should be emphasized in the teaching of otology. In the first place, a brief review of the history of deaf-mutism should be given, showing how much the subject has been neglected by the profession in the past, and how the teachers of the deaf have gradually progressed up through the silent or finger- and sign-method to the oral method, which latter is now being adopted in the great majority of all the schools. Some of them, however, still cling to the manual method, while others have adopted what has been called the mixed method, which is a combination of the manual with the oral method; and there may be some excuse for this combination, especially in the case of physically and psychically subnormal children, but in all other cases the oral method is not only applicable, but undoubtedly the best, and it will eventually, I think, almost entirely supplant the older methods. Moreover, the medical student should be told that all mutes are not absolutely deaf, but some are only partially so, and that a fair degree of hearing-power is not incompatible with absolute mutism. The medical student, therefore, should be taught the various methods for diagnosing deafness in children, and he should learn how to classify them with reference to the varying degrees of hearing-power which are found to exist. They are the congenitally deaf, and the adventitiously deaf or those having acquired the condition. This latter class may also be subdivided into those who acquired deafness before the period of speech-development, and those who acquired deafness after this period. It must be remembered, also, that so much do children depend upon hearing for the maintenance of speech that they generally lose it when deafness is acquired prior to about eight years of age. A third class, therefore, is composed of those adventitiously deaf-mutes who acquire speech before the onset of the deafness and lose it afterward.

The medical student should know that as a rule deaf children are necessarily dumb because they cannot hear, and *only because they cannot hear*, and that they may, and usually do, have all the other qualifications for the acquisition of speech.

The problem of educating the deaf child would be almost identical with that of educating the normal child, if the deaf child were not also mute. It is chiefly because of their muteness, or faulty speech-development, therefore, that at least a sufficient hearing-power to enable children to hear normal speech is so desirable; and when this degree of hearing-power cannot be attained, we should still strive to get the greatest possible amount of hearing-power, because even a little hearing for loud speech uttered in close proximity to the ear is exceedingly helpful in teaching the deaf child to speak.

Of course a certain large percentage of deaf-mutes are absolutely and irreparably deaf, but with persistent effort on the part of the physician as well as the teacher, many of them might be restored from this absolutely deaf class to those having at least some useful hearing-power which could be employed in their acquisition of speech and general education. The physician should be able to detect deafness in children at the earliest possible moment, and he should insist upon such children being treated

in the home exactly the same as normal children are treated, especially in respect to their speech. Children inherit a tendency toward the acquisition of speech. Deaf children in their earlier months babble and prattle very much as normal children do, and a little encouragement at this time on the part of their attendants will greatly aid in the fuller development of speech later on.

Teaching deaf children to speak can best be done in their homes, in connection with hearing people, provided the attendants of the children have time and intelligence to do the work, under the guidance of an expert. Unfortunately many of these children are of the poorer classes, and in these cases special home-schools are necessary and the work should be begun as early as possible, before the school-age. In this manner a large percentage of deaf children may be trained to speak and to understand speech with sufficient facility to enter the schools for hearing children, and thus be educated in the environment which must be theirs in after life. Others, having less aptitude for the acquisition of speech and the acquirement of knowledge, must receive all their education in special schools, for it must be remembered that deaf children differ in their abilities just as normal children do, and each one, so far as possible, should have individual attention and treatment.

I have given in the above somewhat in detail the methods of teaching oto-laryngology to the undergraduate in sixteen institutions in the United States and two in Canada. In the majority of these medical schools, didactic lectures have been virtually abandoned, the instruction being almost wholly clinical. The greater number also confine their teaching to the fourth year, but two, those in Canada, having at present a fifth year, and in these two the subjects are taught in both the fourth and fifth years.

Only seven make the definite statement that final examinations are required in these branches, although the various reports would indicate that an examination, if not held by the respective chairs, is included in the general examination in medicine or surgery, in the remainder.

It appears further that the undergraduate is very much better taught, for his purposes, than the post-graduate. Apparently much remains to be accomplished in post-graduate teaching, both as to methods and system, as well as a more comprehensive classification of students and their needs. The shortcomings in post-graduate instruction are emphasized by Dr. Myles, who states in his communication that "post-graduate teaching in America is very unsatisfactory."

VASO-MOTOR DISTURBANCES OF THE UPPER AIR TRACT.*

BY CHARLES W. RICHARDSON, WASHINGTON, D. C.

In presenting this subject for your consideration, it is not my intention to refer to those gross pathological changes in the upper-air tract which give origin to various reflex disturbances, nor to those peculiar paroxysmal disorders which have a certain period for their onset and a distinctive time-limit, but rather to refer to those types of disorders which occur at any period in the year, persist as long as the excitant is active, and present throughout their course no marked organic change within the nasal chambers or accessory cavities.

It is not generally conceded that the term vaso-motor is an acceptable designation for the train of symptoms grouped under this classification, and, while we might be willing to accept such an impeachment, we turn in perplexity to such critics for a better designation. We know that the turbinal bodies of the nasal cavities are extremely vascular organs, subject to marked changes in their vascularity from time to time, which action is stated to be under the control of the vaso-motor nerves. We are also taught that these so-called vaso-motor controlling nerves are a part of the great sympathetic nerve-system. Bresgen, who has lately made an interesting attempt to elucidate the relation of the sympathetic and disorders of the nose, states that, through the most careful and painstaking investigation of Bidder and Volkmann, it was shown that the sensory nerves distributed to the nasal mucous membrane contain, as a rule, a very large number of fine sympathetic fibers, frequently from five to ten times as many as the cerebro-spinal fibers. Bresgen also quotes Max Buchs' observation made upon the sympathetic, which, he states, had been apparently neglected. Buchs' observations were made upon the abdominal sympathetic, but, nevertheless, have a bearing upon the sympathetic in its general distribution. According to Buchs' experiments, the sympathetic nerve is non-sensitive only in the healthy condition, as shown by animal experimentation. When the nerve is stimulated for some time and rendered hyperemic, it becomes extremely sensitive to pain. Through this hypersensitive nerve various reflexes of a sensory motor or

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vaso-motor character could be produced. Bresgen's conclusion, from a review of these experiments, is that the various nasal reflexes arise from an inflamed condition of the sympathetic fibers. These experiments would lead us to believe that the disturbances within the upper air tract of a paroxysmal character are in the form of altered innervation of the sympathetic nerves, however produced, and justify us, for the present at least, in designating these affections as vaso-motor. (Bresgen, Birkett). Indeed, our lack of information as to the relation of the sympathetic to the cerebro-spinal system, its capability or want of capability of originating impulses, its exact physiological function, and its susceptibility to the influence of altered secretion, hemic changes and toxin leaves much to be desired in our knowledge of this great system.

It is the general observation of all rhinologists that they are constantly having brought to their attention an increasing number of perennial types of vaso-motor disturbances of the upper-air tract, that is, the types of vaso-motor affections which may be manifest at any period of the year, having no certain period of onset and no exact time of cessation. These types manifest themselves whenever the source of irritation is most active and endure in varying degrees of intensity as the source of irritation is present. It will simplify the consideration of these vaso-motor changes by placing them into groups according to the character of symptoms displayed and the changes manifested in the turbinal nasal tissue:

(a) A type of vaso-motor disturbance that appears in paroxysms, being attended with congested turbinals; obstructed breathing, moderate in the daytime, almost or quite complete at night; violent paroxysms of sneezing; copious serous discharge from the nose. This type usually lasts from a few days to a week, and is generally followed by a complete period of relief, until another paroxysm develops. Sufferers from this type usually designate their condition as a "cold."

(b) A more or less constant type of vaso-motor turgescence of the nasal mucosa. This is characterized locally by a relaxed sodden condition of the turbinal tissue, which is very much paler than normal. Nasal breathing is very much impaired at all times during the day, complete obstruction being present at night. Violent paroxysms of sneezing occur usually in the morning and frequently throughout the day.

(c) A more or less constant type of vaso-motor catarrh, in which the symptoms are most frequently manifested at night, although paroxysms may occur during the day. In this type there

is also in connection with the vaso-motor turgescence of the turbinals a similar disturbance in the bronchial mucous membrane. The turbinal congestion is very florid. The obstacle to nasal breathing is apt to be paroxysmal during the day, and usually occurs at night during the early morning hours. Sneezing is usually manifest when the breathing is markedly obstructed. Coughing and wheezing in the chest, with paroxysms of asthma, may be present.

(d) A fourth group would include those cases of vaso-motor turgescence which we occasionally observe in the pregnant woman. This type of disturbance usually manifests itself about the middle of pregnancy and persists until it is brought to an abrupt termination with the emptying of the uterus. Under this class could be brought all the cases which are the product of sexual excitation or perversion.

It has generally been accepted that all forms of vaso-motor disturbances, whether of the paroxysmal or perennial type, require as the essential predisposing factor the existence of what is known as the neurotic temperament. This nervous temperament manifests itself in individuals prone to these vaso-motor disturbances either in the exalted type of excessive nervous energy or in the reverse condition of lowered or exhausted nervous energy. The latter is usually designated as neurasthenia.

In the paroxysmal types of vaso-motor disturbances it is also generally accepted that there must be a hyper-sensitive nasal mucosa in order to respond to the action of the external exciting cause.

In the type of cases which we have under consideration, the condition of the nasal mucosa and that of the accessory cavities seem to have no etiological bearing upon the development of the disease. This has been frequently demonstrated in our own work wherein we have removed spurs and corrected deformities without exerting any influence on the progress of the case; in fact, the consideration of this point brings up the whole question as to the nature of these invasions, the source of the infection or irritation, and the method by which the source of irritation or toxin produces the vaso-motor changes.

With regard to the seat of these affections, there seems to be a general impression, as observed in the published material, that the disturbance is primarily one of the nasal turbinal tissue, excited through the external source of irritation or from the pathological change within the nasal chambers. From a careful consideration of many cases that have been under our observation, we are rather

inclined to believe that the nasal mucosa only plays a secondary part in the process, the primary condition being a general rather than a local one, which expends its force on the nervous system, resulting in disturbing the stability of the bulbar center, with relaxation of the vaso-motor control of the mucosa of the upper-air tract. Whatever impression may be gained from the objective examination of the upper-air tract, which varies greatly as to the deviation from the normal in the cases examined, there will be even presented in the clinical history of all cases the same evidence of undue mental strain, however produced, with oftentimes a corresponding disregard of many of the ordinary hygienic rules of healthful living.

The source of the irritant, whatever its character, must be, in most of these perennial cases, from within, rather than from without, the body. It also seems evident that the irritant agents must be diverse or an agent or toxin that can be generated through various violations of the normal physiological processes. Is the irritant a result of the alteration of some of the normal internal secretions, faulty metabolism, imperfect elimination, or production in excess of some normal excretion, the result of bio-chemic changes in the blood, or from the absorption of toxin generated within the gastro-intestinal tract? It is impossible from our present knowledge to even make a conjecture. Mr. E. B. Waggett, in a paper read before the Laryngological Section of the British Medical Association, calls attention emphatically to our want of knowledge on this all-important phase of this investigation and the desirability of a thorough and scientific laboratory and clinical consideration of this disease in order to elucidate this important point. Indeed, until we have determined the morbid agent which is capable of producing this condition, all our labor is as naught and our treatment must be more or less empirical.

These diseases, the paroxysmal and the perennial vaso-motor disturbances, come under our special care and we have to accept them, but how little have we done in a scientific spirit to get down below the surface and investigate as to what change takes place in the fluids or tissues of the body that renders an individual susceptible to the source of external irritation in the one type of cases and to the probable generation of irritants in the other type of cases! I am aware of the fact that our president, Drs. Grayson, Stucky, and a few others, have made some investigations along these lines and are to be commended for their work, but I believe with Mr. Waggett that the true solution of the problem will be

through a joint investigation carried on by clinicians and bio-chemists.

The manner in which the irritants or toxic agents produce this action is also a question of speculation with us at the present writing. Primarily, the central nervous system and the sympathetic must be in a state of readiness to be excited and to respond tumultuously. We have learned through Max Buchs' investigation that the sympathetic nerves, when stimulated, become hyperemic and over-sensitive to impressions. It, therefore, seems plausible that bio-chemic changes produced in the blood act as a source of irritation in the bulbar center and the sympathetic nerves. When these changes are moderate in character, they simply keep the centers and nerves in a hyperemic condition, when in excess, through increase of the irritants or toxin, above which the stability of the centers, or nerves, can stand, they produce the well-known evidences of this condition.

After a thorough study of the clinical histories of cases and objective examination of these nasal cavities which appear to be normal, as well as those cases in which abnormal conditions have been restored, we have been forced to conclude that the primary impulse that causes the turgescence of the turbinals, with resulting blockage of the nasal passage, comes through the nerve centers and is not due to local nasal changes. These storms, as they may be called, usually occur at times when the nerve-centers are made unusually susceptible through excitement, excessive fatigue, or undue mental activity or strain. In all probability, at the same time and through similar influences, the irritant agent, or toxin, is produced in excess. These disturbances occur at intervals and in a manner, which, to all observant patients, bear out the logic of these conclusions. The patient will notice that the nasal passage will be very free throughout a day, when, through want of conformity with physiological laws with which they know they should comply, in regard to exercise, diet and work, they will note a gradual filling up of the nasal passage, due not to any local influences whatever but as the result of the distributed enervation of the unstable centers generated through the violation of hygienic rules and simultaneous in production of the irritants or toxin.

I am aware of the fact that there is a strong conviction in many minds that this condition is solely the product of local changes within the nasal chambers. Adherents of this view even go so far as to maintain that, when demonstrable pathological changes cannot be shown, there nevertheless exist hyper-sensitive areas in the

mucosa, which, if properly searched for, can be localized, and, if cauterized, will correct the lesion. In this same category should be classed those defilers of the nasal chambers who persist in tearing out disabled, though not diseased, middle turbinates. No doubt these various surgical procedures have a counter-irritant influence for a time and arrest for a period the disturbance. Most operators do not see these cases when the vaso-motor paroxysms return, for, after the futility of the surgical effort is demonstrated, the patients seek other advice. From observation of the results of local treatment in my own hands, as well as the noted results from cases which have been in the hands of other workers in this field, I am strongly impressed with the conviction that perennial vaso-motor disturbances of the upper-air tract are of constitutional rather than of local origin.

1317 Connecticut Avenue.

Ear Conditions in Syphilitics After Administration of Salvarsan.

O. BECK, *Muench. med. Wchnschr.*, Jan. 17, 1911.

Beck draws his conclusions from an examination of over one hundred syphilitics who were referred to his clinic because of ear affection. In one case, that of a hitherto stubborn otitis media, a cure was accomplished in nine days. In other cases, however, the labyrinth and vestibule were affected, but the symptoms developed only several weeks after the injection of the salvarsan. One case presented a typical Meniereiform cerebral polyneuritis; in another the vestibular nerve was affected, but vestibular symptoms developed only after four months and have remained, thus far, unmodified. Beck here points out a possible similarity to the toxic effect of arsacetin which Rothig found in treating mice.

Though untreated syphilitics often show pronounced ear-symptoms yet these symptoms always show a tendency to retrogress. However, one case in which no salvarsan had been administered showed a syndrome, similar to the last mentioned case.

Beck feels that persons whose ears are not quite intact before taking salvarsan are the ones in whom nervous aural symptoms develop after its administration.

ED.

CASE REPORTS ILLUSTRATING OCULAR AFFECTIONS DUE TO INTRA-NASAL AND ACCESSORY SINUS DISEASE.*

BY LEWIS A. COFFIN, M. D., NEW YORK.

So much has been written in the past few years on the relation of eye disease to diseases of the nose and its accessory sinuses as to make a general discussion unnecessary, as well as probably *bore-some* and ill-timed.

All here, I am sure, are familiar with the writings of Ziem, Onodi, Birch-Hersfeld, Posey Holmes Loeb, et al. Many interesting and instructive histories have been written, and yet from conversation with men working in both fields one comes to the conclusion that even to-day there are many who fail to recognize the dependent relationship.

The following histories are offered in the hope that they may help to convince the unbelieving, as well as emphasize some of the points made by the above-mentioned writers.

Many cases of pain in the head and eye, as well as cases showing visual defects or pathological changes in the eye or its adnexa, have been promised relief by the oculist but were doomed to disappointment, because the trouble was not in the eye, but in the nose or some one or more of its accessory sinuses. The converted oculist now recognizes the fact that many of these cases are not to be helped or cured without the aid of the rhinologist, and not infrequently before making the attempt at relief by glasses asks the rhinologist if sinus disease can be eliminated.

On the other hand we, as rhinologists, know that many obscure cases, difficult of diagnosis, notwithstanding all our aids, not infrequently present themselves. In many of these cases the ophthalmologist may help us to a mere positive diagnosis by the description of what he finds in the fundus of the eye and the study of the visual fields.

I am in the habit in most of my sinus cases of having the eyes examined. But, as I have said, this is to be but a presentation of histories, I have selected four cases, every one of whom first sought the advice and aid of the ophthalmologist, and some of them were for a considerable time under the care of the ophthalmologist before being referred for a rhinoscopic examination.

*Read before the Meeting of the American Laryngological Association, Washington, D. C., May 4, 1910.

Mrs. L., aged 27, married, came under my care in the summer of 1908, giving a history of having been under the care of one of New York's leading ophthalmologists for one year, on account of pain in and about the left eye.

Having failed to relieve the pain with glasses, she had been referred to one of our leading neurologists, under whom she had been for several months when she came under my care by "Hobson's choice," I being the only physician in the summer colony where we found ourselves. She was at that time almost a nervous wreck.

On examination the only thing I found which might point to disease of the accessory sinuses was the pain and tenderness on pressure at almost any point where you could bring pressure to bear on the walls of the orbit. There was no nasal discharge nor history of one. I diagnosed disease of some or all of the accessory sinuses, but advised waiting until our return to the city, where an X-ray could be had, as well as better facilities for operation.

The X-ray negative, taken by Dr. E. W. Caldwell, showed distinct cloudiness of all the sinuses, but much more marked on the left side. She was referred to Dr. Frank J. Parker for examination of the eyes. From his history, dated October 1, I take these notes:

"Pain on use of eye. Unable to read but for a short time. Rotation painful in all directions. Left eye painful on pressure. Has had present glasses one year. On examination, fundus normal. Vision, right 20/20, left 20/50. Hypermetropic right eye, compound hyperopic astigmatism left eye."

On October 21, having promised that there should be no depression in the forehead, I did a partially radical operation on the frontal and ethmoids and a radical in the antrum of the left side. Symptoms for a time only partially relieved. After two months they were as bad as ever, and to add to the trouble there was a considerable discharge from the nose. The patient became absolutely discouraged, and really to my relief she ceased coming to my office, until one day near the middle of March, 1909, she presented herself with the left eye closed. She was immediately sent to the hospital and told that no promises as to scar depression, etc., would be given. It is enough to say that after a radical Killian the symptoms were entirely relieved. There is practically no deformity or scar, and the little lady says she feels so much better on the left side of her head than on the right that she is sure there must be disease of the sinuses of the right side and is willing on my say-so

to have the right side operated. In fact, it is my influence only which so far has prevented operation. On January 13, 1910, she was again referred to Dr. Parker for examination of the eye. He reports as follows: "Right vision same as on November 19. On examination left vision showed 20-30 with plus 1 plus 1.50 axis 150 degrees, an improvement of one line on Snellens' test card at 20 feet."

The two following cases were referred to my clinic by Dr. W. N. Carhart, of Dr. David Webster's clinic at the Manhattan Eye, Ear and Throat Hospital. With the first, a girl of twelve years of age, Dr. Carhart furnished me the following notes:

"When she came to the hospital she complained that for three months there had been pain deep down in the socket of the right eye. Previous to this she had had headache and twitching of the lids of that eye.

"On examination some protrusion of globe was noted. There was no limitation of motion, no tension, and exophthalmus was not reduced on pressure. Vision right 12-20, left 20-50. Transillumination showed possible sinus involvement and she was referred to Dr. Coffin. The greater hypermetropia of the right eye may be due to pressure. Field of vision of the right eye restricted."

This case presented no marked symptoms of sinus disease, and I said to Dr. Webster, from whose clinic she came, that I would enter her frontal and ethmoid cavities only at his request that I do so for further diagnosis and possible help. Dr. Webster so requesting, operation was done on March 9, 1908. The frontal sinus was opened and explored and found to be normal. Most of the anterior ethmoid cells were normal, but about the middle of the ethmoid tract was found what seemed to be one or two cells containing pus and inflammatory granulation tissue. Healing was uneventful and all symptoms relieved. A somewhat better history of her previous condition is found on the hospital records, as follows:

"Trouble began four months ago, cause unknown. Mother first noticed that the child's right eye twitched, especially after she had been reading and after school. About the same time she began to complain of severe pain in the frontal region and in the right eye. Headache most severe in the morning. About the same time the mother first noticed exophthalmus of the right eye. Patient has poor vision, but no diplopia. About the same time the child began to have a thick, yellow discharge from the anterior nares," which gradually became less and was nil when she came to the clinic.

These cases emphasize the point that nasal findings may be absolutely negative.

With the second case Dr. Carhart furnished the following notes: "Annie B., aged sixteen, factory worker. Iridectomy performed on right eye some years ago which left a large leucoma of the cornea due to an old injury. When seen she complained of having had pain in the right eye at intervals for some months; also frontal headache. Right eye somewhat prominent. No tension. Fundus not well seen on account of leucoma. Advised second iridectomy to enlarge the coloboma of the iris. Operation successfully done. Also given correction for slight hypermetropia of left eye. Right eye unimproved by glasses.

"September, 1908, has been using dionin for some weeks with some effect in clearing opacity. Right eye more prominent than one year ago. Pain and headache recurring.

"November 25, 1908, some tension in right eye, which is distinctly larger. Suspect frontal sinus involvement. Referred to Dr. Coffin."

This case showed evidence of sinus disease in the pain, tenderness on pressure in the walls of the orbit, and nasal discharge, Trans-illumination and X-ray. Operated about December 1, 1908. For a time pain was relieved. The exophthalmus has been entirely relieved, except for a very short time once or twice since the operation the eye has seemed to protrude a little.

One month after the operation most of the symptoms returned and I again opened the frontal and ethmoid sinuses. I found a necrosing area in the posterior wall of the frontal sinus. Cured to a considerable depth, but did not uncover the dura. Broke through the septum between the two frontal sinuses at its top. Did not in any other way open the left frontal sinus. Healing uneventful. Considerable depression over the site of the right frontal sinus.

This patient never has ceased to have more or less of a purulent discharge from the right nostril, and from time to time granulation tissue springs up about the opening into the sphenoid. The patient is seldom free from pain on one or the other side of the head. She gives me the impression of liking to be worked over, even to major operations, so that I am afraid that, do as much as I will, she always will have trouble. This is the most troublesome case I ever have had, and the only case that to-day I do not consider satisfactorily cured.

The fourth case is that of a young Sicilian girl, fourteen years of age, referred to me by Dr. Crigler, of Drs. Hepburn's and Oatman's clinic. She was referred to me about the first of December, 1909. Dr. Creigler sent me the following notes:

"Said Fortune, aged 14, a native of Sicily, presented herself at the Manhattan Eye, Ear and Throat Hospital on November 12, 1909, for the relief of what she thought to be an inflammatory condition of the left eye. No accurate history could be obtained, owing to her ignorance and peculiar dialect, except that six months previously, pain, photophobia, increased lacrimation, swelling of upper and lower lid with marked redness of the ocular and palpebral conjunctiva developed, together with a muco-purulent discharge from both nostrils, which excoriated the nasal passages as well as the upper lip. The nasal discharge, however, did not develop for one month after the eye symptoms appeared.

"In the course of a few weeks the above symptoms subsided and the patient did not seek aid until a recurrence of the same symptoms in a more aggravated form. When she presented herself at the hospital the following condition was noted: moderate inflammatory edema of both lids of the left eye, but more pronounced in the upper.

"Palpebral conjunctiva very markedly injected and thickened; ocular conjunctiva likewise very much congested. There was a cellulo-vascular infiltration of the outer layers of the cornea in the upper quadrant. Lacrimation was very profuse and the eye very sensitive to light. There was no involvement of the iris or other deep structures of the eye so far as could be made out. The discharge, though not abundant, was of muco-purulent character with a preponderance of the mucoid element. There was no involvement of the lacrimal apparatus.

"Pressure over the antrum and over the frontal sinus did not elicit pain, but the irritating nasal discharge gave evidence of some disturbance in that region. A smear taken from the superior fornix was examined by Dr. Zabriskie and a negative report rendered. No cultures were made.

"As the eye symptoms in this case so closely resembled those of acute trachoma, the patient was kept under observation until November 24, at which time there was no change in the eye symptoms, and although there was no pronounced tenderness over the antrum or frontal sinus, there was a slight puffiness of the left side of the face."

The case was referred to me for an opinion as to the condition of the sinuses. I found the conditions as described by Dr. Creigler except that there was considerable tenderness on pressure on the roof of the orbit. The child said she had never suffered from headache. The lid was red and excoriated and the discharge had piled up in clay-colored flakes on the upper lip. She was referred to Dr. Caldwell for a radiograph. Dr. Caldwell asked me to come to his studio to view the picture as to him it was rather peculiar and unsatisfactory. It was not a convincing picture and she was sent for another exposure. But meantime I had decided to operate anyway, and did so without waiting to see the second negative.

A radical exenteration of the ethmoids was done through a curved incision about the inner canthus of the eye and the entire floor of the frontal removed. There was a large supra-orbital ethmoid cell containing a partially filled muco-cyst—a cyst that was draining into the nose. The bones of the region were soft and the floor of the frontal was partially absorbed so that there was communication between the frontal and ethmoid cell. The entire lining of the frontal was picked out of the sinus as easily as it could have been from water. In fact, it seemed to bathed in a peculiar watery fluid.

Abundant granulation tissue was found throughout the ethmoid tract and in the sphenoid. The antrum was not opened at this time. Specimens from the various operated regions were sent to the laboratory and Dr. Jonathan Wright reported as follows:

1. (Taken from the anterior ethmoids). "Edematous mucosa, containing some products of chronic inflammation."
2. (Taken from the sphenoid). "Edematous granulation-tissue."
3. "Lining of frontal sinus edematous, but otherwise fairly healthy mucosa, except that it contains some structureless bodies of unknown nature."

After this operation the patient ran a temperature for several days ranging from 100° to 102°, after which it subsided to from 99° to 100°. On December 27, I opened the antrum. It was full of pus, the lining membrane edematous and polypoid.

This patient after discharge from the hospital, returned once or twice to the clinic much improved, but ceased coming before the edematous swelling of the lids had entirely disappeared. The conjunctiva, however, was normal and photophobia relieved.

The following case was referred to me by an oculist for a radical operation on the antrum, as he said he had washed it out daily

for some time without apparent benefit. I suspected disease of all the sinuses of the right side and sent her to Dr. Caldwell for a radiograph, which showed my suspicion to be well founded. She was admitted to the hospital for a Killian operation on January 31.

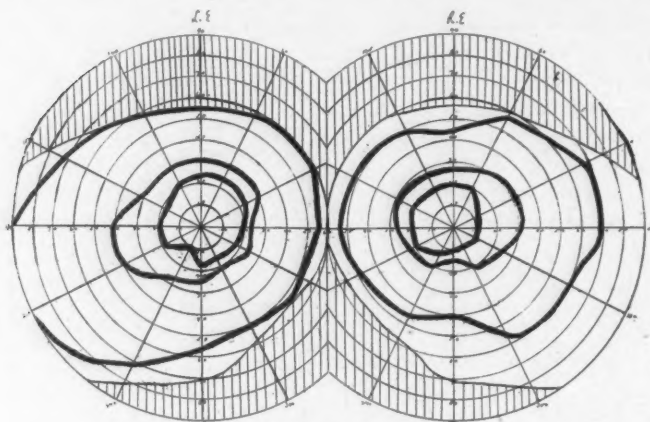


Figure 1.

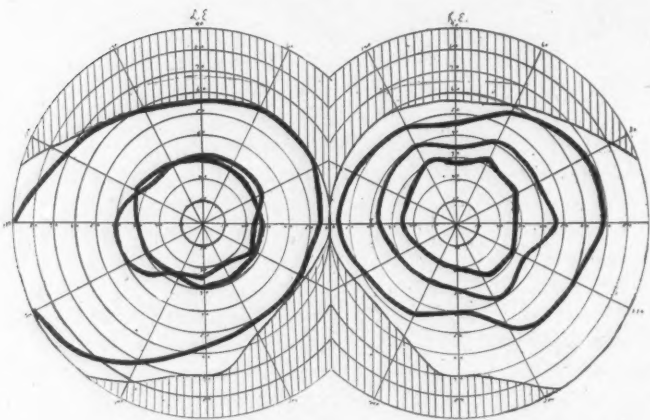


Figure 2.

Her catarrhal symptoms and headache had been of three and one-half years' duration, during which time she had noticed that type became blurred after reading but a few minutes, and at times she saw double.

Dr. Parker examined the eyes on January 28 and reported as follows: Optic nerves of both sides very pale on temporal side and slightly woolly on the nasal side. The color fields were as shown in Chart I, which shows all fields contracted—the right more than the left.

On February 23, twenty-three days after operation, the fundus showed marked improvement in the nerve, and the fields were less contracted as shown in Chart II, the fields for white remaining the same, the fields for red and green considerably larger.

This case interested me, not only on account of the apparent dependent relationship of the eye and sinus disease, but it showed to

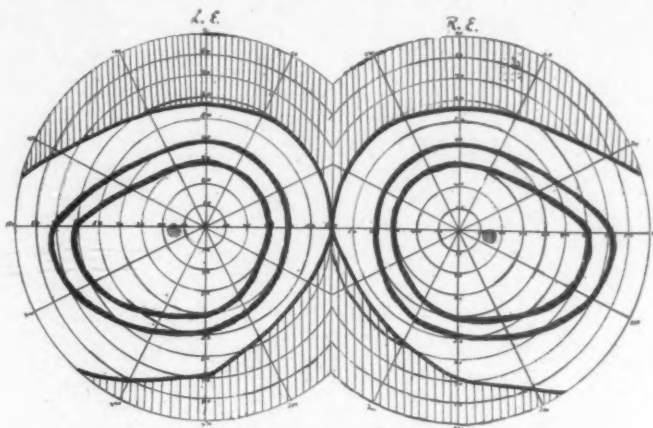


Figure 0.

me that possibly in a study of the visual fields we might find another aid in diagnosis.

Dr. F. J. Parker kindly offered to chart the fields of any patients whom I might send him. The time has been too short to allow me to draw conclusions, but certainly there is much of interest in the study, and I feel that in many cases at least we may receive positive help in diagnosis.

Dr. Ziem *a*, in 1892, reported concentric contractions of the visual fields due to collateral stasis originating in the swollen mucous membrane, which, he adds, is easily understood when one recalls the extensive anastomosis between the vessels of the orbit and bulbous on the one side and those of the nose on the other.

Hajek *b*, in a paper published March, 1910, asks: "How do we explain the inflammation of the optic nerve in simple empyema or

hydrops of the sphenoid with no direct progress of the disease itself," saying that in his own case a direct extension is excluded, as the inner wall of the sphenoid showed no inflammatory changes, and further than an inflammatory process would not subside in half an hour, and explains it as a release of the circulatory disturbance. He also states: "In cases of empyema of the sphenoid with optic neuritis, upon opening of the cavity and release of the pus there is almost immediate retrogression of the neuritis."

I question this being a proper use of the word neuritis.

Prof. Dr. Albert Rosenberg *c* (Berlin) and Dr. F. L. Braun report the ophthalmoscopic examination of 40 cases of accessory sinus diseases and record: 20 cases of circulatory disturbances; 16 cases venous engorgement; 1 case choked disc; 5 cases hyperemia; 3 cases in which edges of disc were blurred; 8 cases of pallor of disc. They

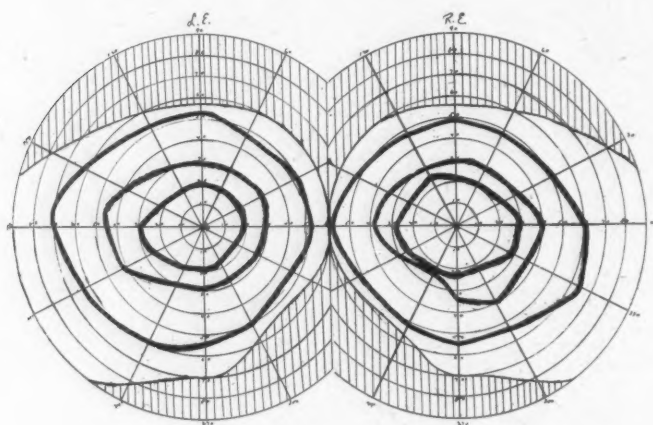


Figure 3.

report the frequent concentric contraction of the visual fields, especially in the field for red; this they found in 14 cases; in only 3 were the fields for white contracted.

Dr. Ernst Huber *d* reported in 1907 a case operated in December, 1906, for the relief of an empyema of the ethmoid and sphenoid sinus in which were evidences of optic neuritis and fields for color contracted. In March, 1907, three months after operation, the fundus and fields were normal.

There probably are psychological variations in the normal fields of vision. Again, they will vary taken under varying conditions,

such as light, fatigue, etc. I shall show you the field charts and radiographic pictures of eight patients, with few remarks and no conclusions, but as we propose to continue the work we shall hope to offer some deductions at a future time. In the meantime I shall be gratified if others will investigate along similar lines.

Charts I and II have been shown in connection with the history of last case.

Chart III shows the fields of a young man 21 years of age, who presented himself at my clinic at the Manhattan, Eye, Ear and Throat Hospital on March 27, 1910, on account of pain in the head and nasal discharge. Diagnosis of pan-sinusitis was made, and he was referred to Dr. Caldwell for radiograph, and to Dr. Parker for

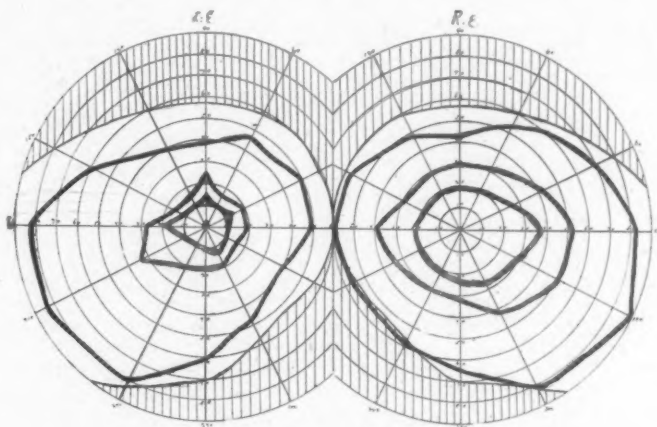


Figure 4.

the charting of the fields. Dr. Parker reported the retina and nerve normal. The fields, as you see, are concentrically contracted, and the X-ray negative shows a pan-sinusitis with the possible exception of the right antrum. The case was referred to Dr. Samuel McCullagh, who is still working on him.

Chart IV shows the fields of a young woman 23 years of age who came to the hospital on February 26, 1910. Always catarrhal; adenoids and tonsils removed six years ago; left middle turbinate removed three years ago. Has constant and severe headaches and always feels as though she has cold in the head, but very little discharge. Referred to Dr. Roof, who, on examination brought her at once to me to ask if I thought the tumor-like body on the

left side of the septum was the middle turbinate in adhesion with the septum. I thought it was. Dr. Roof removed a portion of the lower edge when the middle turbinal was seen behind. I did a sub-mucous resection of the septum and found the tumor to be due

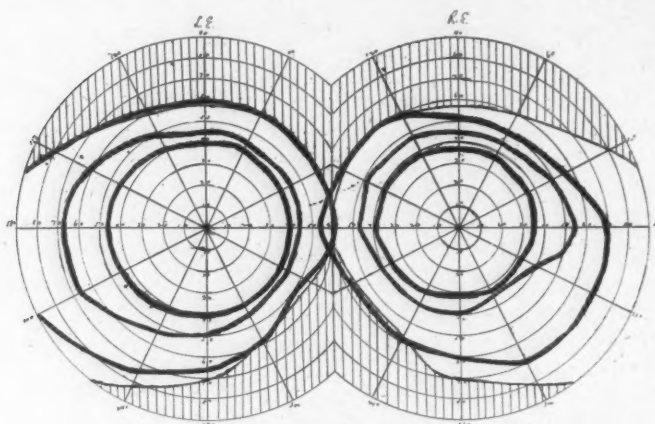


Figure 5.

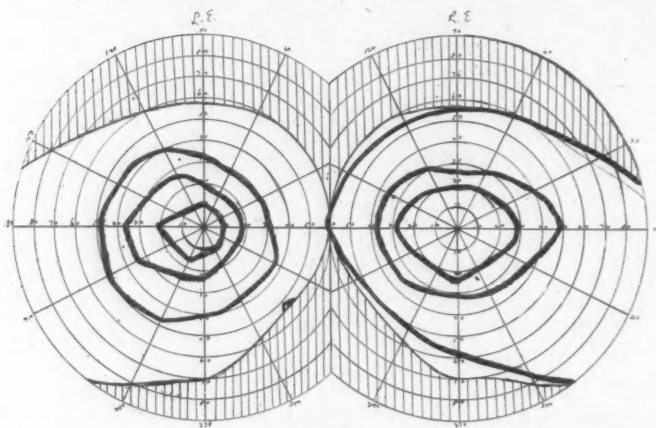


Figure 6.

to an osseous metamorphosis of the cartilage so thick and dense that I was unable to cut through it with a Jansen forceps.

Dr. Parker, to whom she had been referred, reported that she complained of fatigue of one eye and occasional blurring on use.

Retina was normal, except for enlarged veins. The fields had already been taken by a house doctor. They showed such marked contraction that Dr. Parker took them himself. They were the same as reported by the house officer and as shown in the chart before you.

Fearing that the eye-symptoms were due to the intra-nasal conditions, I referred to Dr. Caldwell for proof, which was not forthcoming. As you see from her negative, there is a considerable involvement of the sinuses, especially on the left side. She said she felt entirely relieved after the intra-nasal work and ceased coming to the clinic; I have failed to find her.

Chart V shows the fields of a young girl 17 years of age. Com-

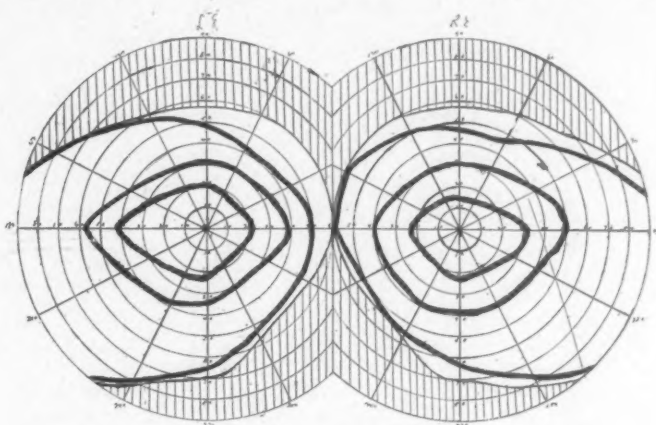


Figure 7.

plaints of headache and vertigo every day for two years. Four changes of glasses without relief. General health good. The patient had no discharge from the nose when she came to the clinic. Dr. Parker reported retina and vision normal, except for the exceedingly large veins, which he said were the most distended he ever had seen. On February 23 removed a very large cystic middle turbinate from the left side. On March 15, headaches gone. Veins of retina normal; fields the same. Since this have exenterated ethmoids with Ballenger's knife. Patient feels perfectly well as to head, but fields remain as before. Negative shows involvement of ethmoids and septum of left side.

Chart VI are the fields of a young domestic 23 years of age. They show concentric contraction of color fields of right eye with

white normal, while the left shows concentric contraction of all fields. Vision in right eye 20-40, and in left eye 20-30, which shows the greater contraction in the better eye. She came to the clinic on account of headache and discharge from the nose. Her negative shows but one frontal, the left fairly clear, but shows involvement of all the other sinuses, showing more marked involvement of the sphenoid on the right side. The patient probably got tired while we were getting ready to treat her and disappeared.

Chart VII shows the fields of a young man 19 years of age, having the most extensively diseased ethmoid and sphenoid I have ever seen. The fields are interesting on account of the extreme amount of red, causing it to look like an inverted field. Inverted

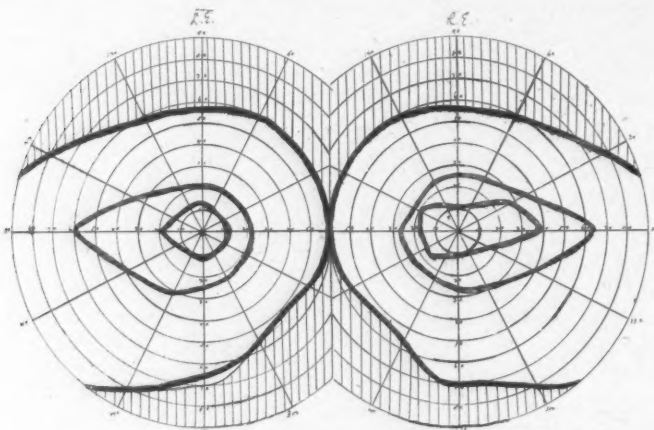


Figure 8.

fields are generally regarded as due to brain tumors or hysteria. This young man has no symptoms of brain tumor, and he certainly does not impress one as being hysterical. The fields have been taken both by Dr. Oatman and Dr. Parker, Dr. Parker having taken them several times. I have done a radical Killian on both sides, as well as a radical antrum operation. His first operation on the left side was on April 1, and the second on the right side on April 2. His fields of right eye on April 26 were the same as before April, but he felt too weak to stand the strain of a long examination and the work was not thoroughly done. His X-ray negative will speak for itself.

Chart VIII shows the visual fields for a man of particularly good vision at 53 years of age, who for the past year has suffered greatly

from headache, so much as to be obliged to give up his work. I have known him for years as a patient and friend, and had suspected intra-nasal or sinus disease. Under advice he left the city for several weeks on account of his headache, but returned no better. I asked Dr. Parker to take his fields, and on this showing sent him to Dr. Caldwell. Dr. Caldwell thought he had involvement of several of the sinuses, especially of his left antrum. Dr. Coakley saw him with me and we agreed that probably any cloudiness of the plate might be due to the very thick, bony walls of the sinuses. All sinuses dark on trans-illumination. We thought some relief might come from removal of the left middle turbinate, which was in contact with the septum. On a further study of the X-ray vization, there appeared to me to be undoubted involvement of some of the ethmoids of the left side, especially those about the orbit, as you will see by looking at the plate. I have removed the turbinate and broken down some of the ethmoidal cells. The patient is much improved and improving.

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This paper represents a presidential address delivered to the Greenock Faculty of Medicine. It consists of a brief historical survey with special reference to those departments of laryngology and rhinology in which so much development has taken place of recent years.

GUTHRIE.

PRIMARY TUBERCULOSIS OF THE NOSE.*

BY C. DOREMUS VAN WAGENEN, M. D., NEW YORK CITY.

John F., 31 years of age, ambulance driver for Lebanon Hospital; admitted to Seton Hospital April 1, 1911. Habits: Alcohol to excess; denies all leuetic infection. Some fourteen years ago this patient began to be troubled with crust-formations in his nose, which he habitually removed with the finger-nail, subsequently aided by the vigorous use of a match. About four and one-half years ago, while employed as ambulance driver, his nose became very sore. For a time he attempted to treat it himself, using hydrogen peroxide and a salve. Obtaining no results he presented himself at the O. P. D., of Lebanon Hospital, Department of Dermatology, for relief. The diagnosis of syphilitic involvement of the nose was made and he was placed on large and increasing doses of the iodide and injections of mercury. Local electric treatment, introduced within a glass tube placed in the nose, was also employed. From his standpoint all treatment was without result to the diseased tissue. On two separate occasions pieces were removed for examination. From the first he learned nothing. The second specimen, so he states, was taken to Cornell Medical College and was there pronounced tuberculous. He next asserts that he was pronounced tuberculous clinically by Dr. J. C. Johnston, of the Dermatological Department of the University. On May 1, 1908, he was presented before the Manhattan Dermatological Society, meeting in this Academy, where, after considerable difference of opinion, his lesion was pronounced tuberculous. In the *Journal of Cutaneous Diseases, including Syphilis*, Vol. 27, p. 137, 1909, this case is reported, without discussion, as one of "Epithelioma nasi at the age of 27, simulating gumma." Here we find the lesion described as follows: "There was then an elevated exulcerated mass occupying the entire surface of the septum on the left side, extending to the columella in front, and for half an inch upward and inward. Edges not hard or pearly; base crusted; diagnosis: exulcerated gumma." It then details the treatment which culminated in the daily administration of nearly 600 drops of the saturated solution of the iodide and twenty-four mercury

*Presented at the May, 1911, Meeting of the Laryngological Section, New York Academy of Medicine.

salicylate injections. "There was no immediate result from treatment; but after a time the ulceration cleared up, the crusts disappeared, the size of the lesion decreased. During the last few weeks, however, the process has remained stationary; and a slight waxy indurated border has appeared at the lower margin of the lesion. Tuberculosis can be excluded, I think, on account of the margin and the absence of tubercular foci in the lesion or around it. I am inclined, therefore, in spite of the patient's age, to favor the diagnosis of epithelioma." The presenter then concludes with remarks adverse to the use of the knife or cautery owing to their mutilating effect and his disbelief in any permanent curative action from the use of the ray.

Following this presentation a section was taken for the presenter by Dr. D. W. Satenstein and submitted to Dr. James Ewing and Dr. James C. Johnston, at Cornell University. Dr. Ewing pronounced the tissue tuberculous. Dr. Johnston, who also saw the patient, pronounced both tissue and patient tuberculous. As the slides were only located this morning, they could not be recovered from the mass of other specimens in time for your study here to-night. They demonstrate tubercle, but not tubercle bacilli.

From May, 1908, until January, 1911, the patient received no other attention than inspection by several doctors. He was variously occupied at anything which came to hand. He was intoxicated on more than one occasion and drank considerably at all times. The disappearance of the "center and bottom" of his nose caused him to again come under observation at the Cornell Clinic, where he was pronounced tuberculous and he was referred to the Department of Health. The Metropolitan Hospital and the Manhattan Eye, Ear and Throat Hospital successively emphasized the diagnosis above mentioned, until his arrival at Seton. During this whole period no recorded examination of the chest appears to have been made, nor did he give any evidence of possible tuberculosis, other than his nasal lesion, until about two months before admission. Then hoarseness developed, followed by painful deglutition. The initial examination by Dr. James C. Greenway, attending, showed no definite pulmonary involvement; a hyper-resonant note over the whole chest, more marked on the right, and some coarse pleuritic friction-sounds at the right base being the sum total of his findings. The case was referred to my department for examination. The nose was in much the same condition as you see it to-night, i. e., a complete destruction of the lower two-thirds of the cartilage and nearly all of the columella. On removal of the thick

tenaceous crusts an area of granulation-tissue was disclosed extending outward onto the alae and inward along the floor of the inferior fossae, a distance about equal to the septal loss. The upper lip was thickened and slightly protruded as though by a cushion of inflammatory deposit. It is interesting in this connection to note the fact, learned this morning, that, when the specimen was taken by Dr. Satenstein from the left base of the columella, the knife sank into a pocket, apparently of necrosis, from which there seemed to be no other exit. On opening the mouth this area seemed to merge into another granular area extending along the right alveolar process. The upper teeth presented a moderate degree of pyorrhea alveolaris. Sections from the nose and right alveolar process, submitted to Dr. D. Clifford Martin, Pathologist to Seton Hospital, were of no value, being too small to survive the various hardening processes.

Trans-illumination, while good for the frontal sinuses, gives a complete shadow for the ethmoidal and antral areas. The mucous membrane of the mouth and naso-pharynx is of that peculiar, almost cadaveric pallor, so commonly found in tuberculous cases. The larynx presents a thickened mucosa, especially marked over the ventricular bands, and an ulcer on the right chord occupying its posterior third. There is painful deglutition and a husky-to-hoarse voice. Temperature, 98°, pulse, a. m., 64; p. m., 102. Sputum examination showed presence of tubercle bacilli. May 1. Nasal condition unchanged. Painful deglutition and the ulceration on the right chord have disappeared, leaving the thickened mucosa. Greater care of dentition had localized the lesion more sharply. By Dr. Greenway: Expansion of both apices poor. Dullness over left clavicle. First and second, right spaces show many large, moist râles with coarse friction-rub in the axilla. Posteriorly there is dullness over both apices and the upper three-quarters of the interscapular region. There are a moderate number of subcrepant râles. Signs are more marked on the left than the right side. Dr. Martin reports the Wassermann reaction as negative. The last examination made one week ago showed an increase in the physical signs in the chest. The nose and mouth conditions were unchanged. In the larynx two ulcerations had appeared, one on the left ventricular band, the other at the left base of the epiglottis. Painful deglutition absent. Since admission, the patient has exhibited the not unusual symptom of encouragement and a hopeful disposition.

Whatever be the nature of the initial lesion, the presence of this patient here to-night would seem, of itself, to arouse grave doubt as to the epitheliomatous nature of the process. The original entry on the books of Lebanon Hospital was an alternative diagnosis of lues or tuberculosis, and it would seem that the means at hand for thoroughly excluding either or both had not been exhausted, while too much importance had been given to the marginal appearance of the exulceration. Indeed, when the patient's occupation is recalled, a glanderous infection might have been given some consideration; in which event, however, he would have been equally unrepresentable to-night. In the presence of traumatic ulcer of the septum the columella usually escapes destructions, owing to its rich independent blood-supply as opposed to the comparatively scant muco-vascular sustenance of its adjacent cartilage. The vigorous and sustained anti-luetic treatment; the loss of the columella long after its cessation, when ample time had elapsed for the appearance of gummatous foci with subsequent necrosis; the apparently slow extension of the process to the nasal fossae and to the right alveolar process at least, if not to other contiguous structures; the more recent negative Wassermann reaction, coupled with the late signs of active tuberculosis in other parts of the respiratory tract, seem to form a mass of evidence bending the judgment more and more to the tuberculous nature of this case, both in its origin and subsequent developments.

616 Madison Avenue.

Adenoid Vegetation in Relation to Tuberculosis. G. SIMON, *Beitr. z. Klin. der Tuberkulose*. Bd. 19, No. 2, 1911.

Simon draws his conclusions from an examination of adenoid vegetations removed from eighty-eight different patients. He found the tubercle bacilli in but three specimens, one of these from a girl with a negative tuberculin reaction. In six children suffering from pronounced phthisis he found no trace of the tubercle bacilli, and in but one of six cases with bronchial tuberculosis. Therefore he feels that tonsils and adenoids play a minor part as portal of entry for the tubercle bacilli and should be left alone unless they interfere with respiration.

Ed.

REPORT OF TWO CASES OF TUBERCULOSIS OF THE NOSE.

BY WM. B. CHAMBERLIN, M. D., CLEVELAND.

The two following cases reported are both of the first or proliferative form, but both presented signs of preceding or co-incident pulmonary involvement. For the microscopical report in each I am indebted to Dr. Oscar T. Schultz, Assistant Professor of Pathology in Western Reserve University. For the physical examination in the first case I am indebted to Dr. Richard Dexter, of the Dispensary Staff of Lakeside Hospital; in the second case to Dr. L. A. Wheelock, who referred the patient to me.

Case 1. Margaret V, a strong, healthy woman of 26 years, was first seen last August. She complained of "catarrh" for the last ten years. Three months ago she "caught cold" and since that time has been unable to breathe freely through the right nostril. The left was unobstructed. Examination showed a large fungus mass springing apparently from the right inferior turbinal. The rest of the nose was uninvolved. This mass which was exceedingly soft and friable was readily removed with snare and biting forceps. When the field was thoroughly cleansed after the operation it was found that very little of the inferior turbinal remained. The case was seen at frequent intervals and again on November 12, after a rather prolonged absence. At this time there was an ulceration one and one-half cm. in diameter on the right septum, the denuded septal cartilage forming its base. Low granulations were found at margins of this ulcer and also on the right inferior turbinal at the seat of the first operation. There was also a beginning new growth on the left inferior turbinal. This was removed in the same way as that on the right side. The case has been observed fairly regularly up to the present time. Occasionally low granulations have been removed and the areas treated on an average of once a week with lactic acid. This patient, whom I now present before you, I regard as practically cured. She complains only of rather frequent accumulations of crusts such as one might find in an advanced case of atrophic rhinitis.

Dr. Dexter, at his examination soon after the first operation, reports the following: Slight dullness at right apex, front and back with increase in pitch and duration of expiratory murmur and

possibly a slight retraction at the right apex. There are no râles but a slight increase in vocal and tactile fremitus. Temperature, 101° . He considered the process at the apex healed. Subsequent examination gave practically the same findings while X-ray examination confirmed the diagnosis of apical involvement.

Case 2. Rozie Z., aged 30 years, never robust, but at present fairly well nourished, referred by Dr. Wheelock. She complained of pain and swelling on the right side of her nose for two months past, considerable discharge of pus, with pain over entire right side of her head. On examination the entire nose, but especially the right side was found to be markedly swollen, red, indurated and tender. In the right vestibule there was a granular, cauliflower mass springing from the ala, floor, inferior turbinal and septum. This mass was very soft and friable, bleeding freely under pressure from the probe. The nasal obstruction was marked. On the left side there was a soft, friable, mushroom-shaped mass springing from the nasal floor and septum. The discharge was profuse and of very foul odor. Under cocain as much tissue as possible was removed from both sides in order to establish drainage, as well as for microscopical examination. Two days later, September 29, the external redness had markedly decreased, the pain was much less and the nose on both sides was fairly patulous. On October 11, the redness and swelling of the external nose had entirely disappeared, the discharge was less, but still very foul. Under cocain and adrenalin, large masses were removed from both fossae. On examination with the probe, bare bone was felt on the left side and two perforations, one in the cartilaginous and the other in the bony septum near the nasal floor were discovered. There was also a large area of denuded cartilage on the right side. This was my last opportunity to observe this patient. I am accordingly unable to give any further report as to the progress of the lesion. Dr. Wheelock, who examined the patient soon after the first operation, reported unmistakable signs of pulmonary involvement. The redness and induration of the external nose in this case can be attributed to secondary infection. It was certainly not a lupus. The fetor might be due to the same cause as well as to the fact that there was such extensive bone-involvement. The possibility of a co-incident syphilis should not be overlooked, though in view of the histological findings there can be no doubt as to the diagnosis of nasal tuberculosis.

Dr. Schultz's report is as follows: "Upon microscopic examination both cases present many points of similarity, with only a few

minor ones of difference. In both there has been a new formation of a large amount of tissue, composed chiefly of lymphocytes. These almost hide the very small amount of young connective tissue stroma which has been produced. New-formed blood-vessels are also present. In the one case typical miliary tubercles with characteristic giant cells are fairly numerous and caseation is slight, being limited to the centers of the tubercles. A few scattered giant cells, not associated with definite tubercle formation, occur. In the other case the tubercles are more widely separated, are not so numerous, are larger and apparently conglomerate. Characteristic giant cells are not so numerous. In general, in this latter case, the histological picture of tuberculosis is not quite so evident as in the former, most probably because caseation is somewhat more marked, having apparently, to a great extent, replaced such tubercles as were originally present. Of the various elements which may be present in the tuberculous process—tubercle formation with giant cells, caseation, lymphoid infiltration and proliferation of fixed tissues—infiltration by lymphocytes predominates and characterizes the lesion; whereas caseation is less marked in both cases than one usually finds in such an amount of tuberculous granulation-tissue. Surprising is the small number of bacilli present in both cases. It required prolonged search through a large number of sections to find an occasional, isolated, acid-and alcohol-fast bacillus. From the nature of the lesion and the numerical relationship of the bacilli one gains the impression that the bacilli are not only not numerous but also not very virulent."

It is possibly a matter of some satisfaction that in each of the above cases the question of pulmonary tuberculosis was first suggested by the nasal findings.

1021 Prospect Avenue.

Consideration of Some Cases of Caseous Rhino-sinusitis. H. MASSIER, *Rev. hebdomadaire de Laryngol. d'Otol. et de Rhinol.*, May 28, 1911.

Caseous masses in the nostrils may be simply of nasal origin or may spring from one of the accessory sinuses. It is important to distinguish between the two as each requires a different treatment. The author cites four cases illustrating this point.

SCHEPPEGRELL.

SOCIETY PROCEEDINGS.
NEW YORK ACADEMY OF MEDICINE.
SECTION ON LARYNGOLOGY AND RHINOLOGY.

Regular Meeting, January 25, 1911.

LEE M. HURD, M. D., CHAIRMAN.

(Continued from page 821.)

DISCUSSION.

DR. SMITH said that in the cases presented by Drs. MacKenty and Cocks, he saw no material cosmetic improvement over those operated upon by the Killian method, in fact, he believed that for large sinuses no operation yet devised could compare with it for the avoidance of deformity. He furthermore believed that the operation cited by the gentlemen was nothing more than the original Jansen operation and felt that a new name for it was uncalled for.

He himself believes that a great many cases operated upon externally could be cured by internal methods without endangering the patient's life, although it necessitated longer and more careful treatment. A number of cases coming under his observation had finally recovered, when at times it had seemed almost imperative to perform some external operation. He considers it good surgery to treat a case for a year or two if by so doing a recovery is obtained without external deformity.

DR. MACKENTY said that a few years ago Dr. Berens had called his attention to this method of operating for sinus cases, and he had used it exclusively in all cases operated on since. The removal of the floor of the sinus gives good access and good drainage, and leaves practically no deformity. This operation is applicable in large sinuses as well as small ones. The only reason for opening through the anterior wall of the frontal sinus is to more thoroughly inspect and curette the upper portion in very high sinuses. Even these can be cleaned out by removing a little of the overhang on the orbital ridge. The method is applicable to deep and wide sinuses. If a window is made it should be made only large enough to allow thorough inspection and curetting. The entire anterior wall above the bridge should not be removed unless diseased. It is necessary to take a strong, deep suture at the angle of the wound, so as to draw the periosteum tight in order to bring the flap back

into the proper place, thus bringing the superior oblique into its normal relation. He never uses any drain in his cases, but sews the wound up. The stitches are removed on the next day. If left in over twenty-four hours, they leave stitch-hole scars. He used a cigarette drain, in the nose, as it comes out much easier than gauze packing.

DR. W. W. CARTER told of a case of frontal sinusitis which he showed the previous year, which had been operated upon ten months earlier. At that time there was considerable criticism of his method, but having seen the case only a week ago and the result being perfect, he ventured to recall it. The patient had suffered terribly from sinusitis of the left side for six or eight years, and the Caldwell-Luc operation of complete exenteration of the ethmoid and sphenoid cells had been performed, without effect. He then made an opening in the anterior wall of the frontal sinus as large as a ten-cent piece, curetted the sinus, and made a large opening following the naso-frontal duct into the nose, drained it, and closed the opening into the frontal sinus. In twenty-four hours the drain was removed, and the woman got well, and has remained so, the case having been seen within the last month. He would not advise this in all cases, but in this particular instance there was a small sinus with no pockets or diverticula, and the operation worked all right; the opening from the frontal sinus into the nose still remains, and is as large as a small lead pencil.

DR. COCKS said that Dr. Van Wagenen had inquired about diplopia following these operations. In a few instances there was a transient diplopia, lasting from a few days to two weeks. In the first case presented there was diplopia for ten days or two weeks when looking at objects in the upper part of the visual field. This was due to a temporary involvement of the superior rectus muscle, and is unusual. The ordinary diplopia encountered is, of course, due to temporary interference with the functions of the superior oblique muscle.

DR. MACKENTY said that the cases were thoroughly treated in the clinic before being operated upon radically. Dr. Cocks had been very particular about that, and had operated upon no cases that had not been thoroughly treated by other methods for months.

Benign Angio-lymphoma of the Tonsil.—Unusually Large Tonsil.

—By JOHN HORN, M. D.

The patient, a girl, 16 years of age, came to him recently to have her tonsils removed. Upon examination he found on the right side

the largest tonsil he has ever seen. It was pedunculated and extended into the rhino-pharynx. He removed a piece from the upper and another from the lower anterior end. The hemorrhage was slight. The pathologist reported it to be a benign angio-lymphoma.

Primary Epithelioma of the Tongue.—By WOLFF FREUDENTHAL, M. D.

Dr. Freudenthal said that the patient had appeared to-night without his knowledge, but that he was glad of the opportunity to present him, as he exhibited a very interesting picture of the pharynx, and had been under radium treatment. The man was 76 years of age, and had been well up to ten years ago, when he had a paretic stroke, and was incapacitated for some time. He is not yet quite normal mentally. Two months ago he commenced to have difficulty in swallowing and his speech became bad. Examination showed a bleaching left tonsil, absolutely white, as though it had been cauterized. The white spread very rapidly, and is still spreading. A small piece was removed and sent to the pathologist, and proved to be a rapidly-glowing malignant neoplasm, affecting the tonsil and tongue as well. These cases of primary epithelioma of the tonsil are rare.

Dr. Freudenthal said that he has another patient, much younger, under radium treatment. He made an incision from the outside and inserted a tube, and last week the patient went around for five days with the tube in the mass, coming from Brooklyn every day to report. He is holding his own, and the mass appears to be much smaller. As it is a case of malignant epithelioma, he would not venture to say what will be the outcome.

Angio-fibroma of the Larynx. By S. W. THURBER, M. D.

The patient was an Italian carpenter, 31 years old, seen in Dr. Simpson's service at the Vanderbilt Clinic three days before. His history is negative, except for hoarseness coming on after a cold about three years ago. He has had no dyspnea at any time and can climb ladders, run and do his work without any discomfort. One year after his hoarseness developed, he had an attack of laryngitis lasting about thirty-six hours, during which time he spit up some bloody mucus.

He presents in his larynx a purplish tumor, half an inch in diameter, protruding from the right ventricle in its anterior half and covering the laryngeal opening, but not interfering with the motion of the cords which lie beneath.

While this tumor had the appearance of being very vascular, there was but once in its history when there had been any bleeding from it. Dr. Thurber would like the opinion of some of the members of the Section as to the best method of removing it. He himself was inclined to take it out with a cold wire snare.

DISCUSSION.

DR. SIMPSON said that the appearance of the tumor would suggest an angioma. On general principles he would use a snare to remove it, hugging the attachment to the commissure very closely. The chances were that there would not be very much hemorrhage.

DR. MAYER said that he would not attempt endo-laryngeal removal, fearing profuse hemorrhage, which might be fatal. He would prefer doing an external operation on the larynx, where with a Pacquelin cautery he could check the bleeding if it occurred.

Stenosis of Lower End of Esophagus. H. L. AKIN. *West. Med. Rev.*, Feb., 1911.

Three cases are reported by Akin. He emphasizes several points, first of which is the importance of having the proper kind of bougie. The only reliable instrument, in his opinion, is a long 24 or 25-inch whalebone bougie, stiff enough so that it will not bend, but will go straight through where it is directed. His second point is the use of the silk thread swallowed the day before so as to allow it to become firmly engaged in the bowel below the stomach. This is a simple but highly commendable procedure, he asserts, because it enables the operator to introduce the bougie or dilator directly to the permeable point of the stricture and to use such force as is required to pass on into the stomach with a certain knowledge that his instrument is not going to deviate to the right or left and perhaps make false passage into the lung or pleural cavity. Akin favors dilatation of the stricture whenever this is possible.—*Ex.*

CHICAGO LARYNGOLOGICAL AND OTOLOGICAL SOCIETY.

Regular Meeting, February 21, 1911.

CHAS. ROBERTSON, M. D., CHAIRMAN.

Analysis of the Weber Test in 100 Cases. By ROBERT SONNENSCHIEIN, M. D., Chicago.

(Original contribution to THE LARYNGOSCOPE, page 660, May, 1911.)

DISCUSSION.

DR. HOLINGER stated that if Dr. Sonnenschein in his paper "Analysis of the Weber test in 100 cases," tries to prove that this test is often unreliable he carries coal to Newcastle. Bezold, in his textbook, says "More reliable than Weber's test, etc."; so he did not know what the doctor's intention was. He does not give any literature on the subject. If, on the strength of this analysis he tries to condemn the test entirely, he is wrong. Only the other day a lady was examined, complaining of hard hearing in one ear, dizziness, headaches, etc. Other tests made him suspicious of brain-tumor. This suspicion was emphasized by the total absence of bone-conduction as revealed through Weber's test.

Even if this test is not absolutely reliable he tries to get as much out of it as he can. In order to do that he would advise the following precautions. Always put the tuning-fork on the vertex, but in doing so avoid the sutures of the bones of the skull, as they are usually more or less sensitive to pressure of the steel handle of the fork. Furthermore, use tuning-forks without weights. They sound longer and often a patient who is uncertain in the beginning, when the fork sounds loudly, gives reliable information when the sound slowly dies away. Another reason for this advice is that a tuning-fork with weights shakes much more, and the patient has more difficulty in distinguishing the sound from the feeling of vibrations. He almost exclusively uses an A fork, exceptionally an $a_1 c_1$ is only three tones from A. These are the directions of Professor Bezold. That others with all kinds of deviations from these rules get less reliable results is not surprising, but it is unfortunately a fact that so many critics of Bezold's work have changed the premises of his experiments to suit themselves and afterwards from the result of these changed premises have criticised the conclusions and results that Bezold obtained.

The clinical value of Weber's test can only be considered in connection with the other tests, Rinné's and Schwabach's, and the lower sound limit.

DR. SHAUMBACH: Dr. Sonnenschein's work has brought out clearly two important facts in the Weber test. The one is its uncertainty and the second is its unreliability. In both of these regards the Weber test is inferior to the other tuning-fork tests. Theoretically, the Weber test is the simplest, and should be the most useful of all the tuning-fork tests, but unfortunately its application has the handicaps pointed out.

In regard to the uncertainty of lateralization, I always use the A and the a_1 Edelmann forks, and when the response is unsatisfactory I also use the C. The difficulty in distinguishing between the jarring of the larger forks and actual tone-perception is not a draw-back. I should place as much confidence in the statement that the fork is felt in the ear as though it were heard. A practical point of some importance is that when the fork is sounding loudly the patient may fail to recognize the lateralization which can be made out distinctly as the fork begins to die out.

A practical point in applying the Weber test that we must always keep in mind is that the patient expects to hear the fork in the better hearing ear, and when there is uncertainty as to lateralization the patient is much more likely to state that the fork is heard in the better hearing ear. If the patient volunteers the statement that the fork is heard in the deafer ear, this can be accepted with much more confidence. There are a few cases, however, where the Weber is lateralized distinctly in the affected ear, and where the defect in hearing is due to nerve deafness. Cases, for example, of tumor of the acoustic where this phenomena is observed has not, I think, been satisfactorily explained.

Occasionally in cases of marked deafness one observes the lateralization of one fork to one ear and of another fork to the opposite ear. Such findings have often caused confusion in interpreting the Weber tests. I have studied several cases of this sort where the A fork is lateralized to one ear and the A_1 fork to the opposite. These are usually cases of advanced otosclerosis, where, in addition to the ankylosis of the stapes, the cochlea itself is more or less extensively involved. The explanation of the divergent result with the two forks appears to be that the A is lateralized to one ear because of the fixation of the stapes. The a_1 is lateralized to the opposite ear because the degenerations in the cochlea have lowered the perception for this higher fork.

There is one class of case where the Weber test is the ideal one for establishing the diagnosis between obstruction, in the middle-ear and disease of the labyrinth. These are the cases of advanced

unilateral deafness with the normal hearing on the opposite side. In these cases all of the other tuning-fork tests leave us in the lurch. The Rinné test will always be negative irrespective of whether the defect is due to a fixation of the stapes or degeneration of the labyrinth. The Schwabach test gives little assistance, since even in cases of complete labyrinthine deafness the duration of bone-conduction from the mastoid on the affected side is usually practically as long as from the well ear. In attempting also to apply the test for defect at the upper end of the scale, we meet again with the great difficulty of excluding the normal ear. If we use the Bárány Laermapparat we drown out in a measure the hearing in the ear we are examining. If we attempt to exclude the normal ear by the method of rubbing the ear with the palm of the hand we fail to exclude this ear.

DR. SONNENSCHN, in closing, emphasized the fact that this series of tests was made, as expressed in the opening of the paper, for the purpose of furnishing the writer with a more definite idea as to the practicability of certain forks in routine work. The purpose was not to attempt to discredit the Weber test, nor are the conclusions arrived at in this thesis ones which would condemn that test, as was assumed by two of the gentlemen who discussed the paper. However, in the results obtained in the 100 carefully-examined cases one sees the fact once more demonstrated that the Weber test has a tendency very often to show unexpected and irregular reactions at times depending upon either: (1) the actual lesion present; (2) the different forks employed, or (3) the part of the head on which the fork was placed.

Dr. Shambaugh's point regarding otosclerosis as the condition usually present when the Weber is differently lateralized with the various forks is a valuable one; unfortunately there were not enough such cases in this series to allow any conclusions with reference to this idea.

Lantern Demonstrations of the Operations for External Nasal Deformities. By JOS. BECK, M. D.

DR. BECK presented the subject of operations for external nasal deformities by first showing a case of a form of such conditions: Mr. J., aged 27, met with an accident five years ago by touching a live wire, which caused marked destruction of his face and arms. The right arm was so markedly affected that amputation became necessary. The loss of tissue about the face consisted mostly of skin and subcutaneous connective tissue except the nose, in which

the entire left alar cartilage was consumed, leaving the lesions as shown in the illustration, unilateral deformity. This case has been of interest from another point of view, namely, the action of fibrolysin in softening the scars.

This remedy was administered in order to make the structures more pliable before operation, so that perfect coaptation could be obtained. This result was clearly manifest by palpation, in that the scars became freely movable, but of much more interest was the microscopic study of scars removed from time to time during the administration of fibrolysin, which was positive in demonstrating the sluffing of scar-connective tissue.

Another point of interest in connection with this case was the method proposed by Dr. Beck, for remedying the defect of the left ala. The patient has a projection of the anterior septal cartilage which Dr. Beck intends to utilize to take the place of the missing ala, performing the operation at two different times, severing the projecting portion from the remaining portion of the septum only after it has become attached to the external wall of the nostril.

The case was presented before operation so that the members would have the opportunity of comparing the result obtained from the plastic work with the condition found before operation.

Dr. Beck further demonstrated by means of lantern slides the various external nasal plastics, beginning with the Italian method, introduced by Togliocozzi in 1547, and ending by the most modern operations for external deformities by the intranasal route—together about fifty varieties of procedures were shown.

Some Rambling Thoughts Concerning the Subject of Radical Mastoid Operations. By FRANK ALLPORT, M. D.

DR. ALLPORT discussed the following points:

THE INCISION: This is long and curved over the auricle. The mastoid tip is freed from the tendinous tissue by curved scissors, the periosteum is pushed back, the cartilaginous and osseous meati are separated by a spatula, a gauze strip is passed through the meatus to hold the cartilaginous meatus out of the way, and then the self-retaining retractors are placed in position and screwed up to their widest expansion. Artery clamps are not used, the retractors stop all soft tissue hemorrhage. One pair of retractors is placed in the upper end of the wound, and one pair in the lower. Unless the cerebellum or the backward course of the sinus are to be opened, no backward incision is necessary. A long incision and widely-expanded retractors supply an ample operative field. These retractors are in every way far superior to hand-retractors.

THE CHISELING: Broad chisels should be used wherever possible. They are safer and quicker. The cortex should be shaved off until the interior of the bone is exposed; then we can proceed more surely. By care the sinus will not be opened, and if the primary bone-chiseling does not extend higher than the roof of the meatus, the dura will not be exposed. After the cells are exposed it may be necessary to chisel higher, but higher chiseling should be discouraged until they are exposed. Peculiar bones are sometimes seen with backward shelving meati giving a wrong impression as to the location of the bones' contents. The margin of the meatus is thrown much too far backward, and if chiseling is begun here the sinus will probably be opened. These bones should be recognized, and chiseling should be based on the place where the meatal margin should be and not where it is.

The posterior wall of the bony meatus is chiseled down at the same time as the contiguous bone; it has to come down any way and might as well come down at first as later, and it makes more room for operating. The outer one-third of the posterior meatal wall should be cut down so that there is nothing of it left, but much circumspection should be exercised in working upon the inner two-thirds, for inside of its bony structure passes the facial nerve. The inner portion of the meatus, or the "bridge," as it is sometimes called, can be cut away best by careful chiseling. The higher up we chisel, curette or bur, the less is the danger of hurting the facial nerve.

THE USE OF THE BUR: The bur is the best, quickest and safest method of cleaning out the interior of the bone, and is especially useful in delicate and dangerous locations. Everybody should learn how to use it. All necrotic areas can be swiftly and safely removed by the bur, and it produces a beautiful, smooth, healthy cavity, unequaled by any other method.

THE EUSTACHIAN TUBE: The tube should be thoroughly curetted, not forgetting its close relationship with the carotid artery. The points of curettes should always be directed forward and upward to avoid injury to the artery. Dr. Allport also uses round hand-burs of different sizes to clean out the tube and frequently rims out the tympanic orifice of the tube with the electrically-driven bur. But one should be an expert in handling the bur to do this. Not only should the granulating mucus membrane be removed but some of the bone at the orifice should also be removed in order to close up the tympanic orifice of the tube absolutely, and prevent permanent tubal dripping, which presents the appearance of an uncured case. Sidney Yankauer's new tube-curettes are useful

instruments. Of course, all significant nose and throat complications should be relieved.

THE FLAP: Dr. Allport still uses a modified Panse flap with the entire flap turned upward instead of one-half up and the other half down, as recommended by Panse. In other words, his lines of incision represent a letter L instead of letter T. He still uses the metal Michel sutures.

THE DRESSINGS: He packs the cavity with gauze until its shape and outlines are established, which takes from two to three weeks. After this he completely fills the cavity at each dressing with powdered boracic acid. His cases are usually, but not always of course, healed in from eight to ten weeks.

THE HEATH OPERATION: Dr. Allport still believes that this operation is based upon unsound surgical principles and neither uses nor recommends it.

GRAFTING: He rarely finds grafting necessary, but if, in about three months, there are any unhealed areas, he inserts small, thin shavings of skin. He has always been opposed to Dench's primary grafting on recently-chiseled bone, as it did not seem likely that grafts would adhere and live until some granulations had covered the bone. A recent visit to Dench's clinic, however, and a careful observance of his work and results have convinced him that his methods are admirable and well worthy of emulation.

DISCUSSION.

DR. JOSEPH C. BECK: As usual, Dr. Allport has presented the subject in a masterful manner, and many new points of interest have been brought out. There are, however, a few little points that might be mentioned that play an important rôle in the technic and healing-process of the radical mastoid operation.

In the first place, Dr. Allport made no mention of the influence of the pathological condition on the healing process. For example, where there is cholesteatomatous infiltration of bone the healing is much delayed. In the second place, Dr. Beck is in favor of more conservative treatment, particularly where there is suppuration in both ears and the radical procedure might cause the patient to lose the hearing in both. In this case, if in no other, the semi-radical procedure is indicated on one side, with the hope of preserving the patient for better hearing.

DR. HOLINGER: Dr. Beck drew our attention to the pathology of the condition for which we are most frequently called upon to perform radical mastoid operations, namely the cholesteatoma. We know that the cholesteatoma-matrix is nothing else but an epiderm-

ized scar, which took the place of destroyed lining of bone in the mastoid process. Every bit of this epidermis ought to be preserved because the epidermization of the whole cavity starts and progresses from these islands of epidermis. Dr. Holinger would like to caution against Dr. Allport's advice about drilling the bone with an electric bur until there is a cavity surrounded by smooth walls, because in so doing he can not help destroying the islands of epidermis so valuable for the shortening of the period of recovery. There is not even any advantage in this concerning the final result, because the granulations which form will change the size and shape of the cavity so that we hardly can compare it to the original one.

Taking care of the Eustachian tube is another point where opinions differ. Dr. Allport and many other operators are certain that they always can produce a bony occlusion of the tube. Other equally trustworthy authors insist that this desideratum can only rarely be reached and that often a fistula remains which later on keeps the cavity moist. Add to this uncertainty of success the danger of injuring the top of the cochlea, which means destruction of a part or all of the remnants of hearing, often so valuable to these patients, and you have the reasons for the fact that Dr. Holinger did not formerly, nor will in the future, in treating the Eustachian tube go beyond careful removal or cautery of granulations around the opening of the tube. Nevertheless, he thinks he can favorably compare his results with those of Dr. Allport; for even in 1898, before the Chicago Medical Society, he presented patients with perfectly dry and epidermized cavities six weeks after radical operation was performed. Dr. Allport speaks now of eight to ten weeks, and another gentleman shortly before his presentation in 1898 had given the time as three to six months.

Dr. BOOT stated that he wished to call the attention of the Society to a point that he had mentioned before in this Society, namely, that the facial nerve in infants emerges opposite the middle of the annulus tympanicus, and is in great danger of being cut off if the incision is made as far downwards as is usual in adults.

Another point of importance in mastoid surgery is that great care should be used in curetting the upper posterior quadrant of the tympanum for fear of injuring the facial nerve, which is covered here by only a thin layer of bone, and at times is not covered at all by bone. There is danger also of dislocating the stapes, and thus opening up an avenue for infection to enter the labyrinth if one curettes in this region. Fortunately the stapes is partly protected by the overhanging facial ridge. It is best not to curette at all in this region.

When we remember that the carotid canal is separated from the tuba auditiva and from the tympanum by a layer of bone that is often no thicker than a sheet of paper, we must congratulate Dr. Allport that he has never perforated the internal carotid artery in reaming out the tympanic orifice of the tuba auditiva by an electrically-driven bur that is so powerful that he finds it necessary to hold it with both hands to keep it from wobbling. Dr. Boot is very much afraid that if Dr. Allport were to perforate the carotid and find it necessary to ligate that the circle of Willis would make more than one ligation necessary.

DR. SHAMBAUGH does not think that Dr. Allport emphasizes sufficiently the danger to the hearing in the radical mastoid. Where a person is forced to rely upon one ear for the hearing, one must be very slow about doing a radical mastoid. Under these circumstances if conditions demanded an operative interference for relief Dr. Shambaugh would be inclined to stop short of a complete radical and relieve the conditions without cleaning out the tympanic cavity. He has recently been forced to operate upon a case where a cholesteatoma in the antrum, breaking through into the meatus, produced so much pain and discomfort that an operation had to be done. The hearing in the opposite ear was practically gone and the patient relied upon the ear with the cholesteatoma for hearing. Under these circumstances the incomplete radical is preferable, even although the patient may have annoyance from time to time from secretions.

Dr. Shambaugh can hardly justify the work which Dr. Allport does around the tympanic orifice of the Eustachian tube with the electric bur, etc. The internal carotid often makes a prominence in the tympanic cavity itself, so that using the large bur at the orifice of the Eustachian tube may easily break into the carotid, even without entering the Eustachian tube. He does not hesitate to curette away granulations which occupy the tympanic orifice of the tube. No amount of work in the Eustachian tube can hope to eradicate the tubal cells which one frequently finds leading off into the bony structure.

Dr. Shambaugh does not understand clearly Dr. Allport's method of placing the floor of the meatus and the tip of the mastoid on the same plane. There must always be a decided ridge left between the tympanic cavity and the depth of the mastoid, because the facial nerve, which is on a level with the inner wall of the tympanum in the region of the oval window, comes out more and more along the posterior wall of the canal on its way to the stylo-mastoid foramen.

BOOK REVIEWS.

Diseases of the Ear, Nose and Throat, Medical and Surgical.

By WENDELL C. PHILLIPS, M. D., Professor of Otology, New York Post-Graduate Medical School and Hospital, etc. Pp. 847, illustrated with 645 half-tones and other engravings, a large number original; also many in colors, including over 30 full-page plates. F. A. Davis Company, Philadelphia, 1911.

In this period of multiplicity of book-making it is a consummate art to produce a work on diseases of the ear, nose and throat which is complete of its kind and also bears the stamp of the author's individuality.

It is difficult to say whether the distinctive feature of this treatise on diseases of the ear, nose and throat by Dr. Wendell D. Phillips is due to the manner of arranging the subject-matter, to the character of the text and illustrations, or to the refreshing style of the author. Even the less critical reader in glancing through these pages is impressed with the fact that "there is something different from that of the usual text-book in this field." To us it appeals from another point of view in that the author concerns himself largely with the work of American otologists and laryngologists, and nearly all of the best original efforts of American co-workers is given prominent mention in this volume.

The subject-matter is clear, concise and thoroughly up-to-date. It is a practical working treatise and combines the advantages of a text-book with that of a comprehensive operative surgery of the ear, nose and throat. More space is devoted to the description of operative technic, to treatment and to clinical remarks than to anatomical details and pathologic data. The illustrations are, for the greater part, original and those included by permission of other authors are carefully selected and used to present some special or modern feature. We congratulate both author and publisher on this carefully prepared and well produced, distinctly American work on diseases of the ear, nose and throat.

Imperial Stereoscopic Anatomy of the Head and Neck. [Normal Anatomy of the Temporal Bone and Internal Ear.]

By FREDERICK E. NEVES, M. D., formerly instructor in operative otology in the New York Post-Graduate Medical School and Hospital, and Chief of the Clinic of the Manhattan Eye, Ear, Nose and Throat Hospital, New York City. Section IV. Imperial Publishing Company, 27 East Twenty-second Street, New York, 1911.

In our review of this important work on the stereoscopic anatomy of the head and neck, in the December, 1910, issue of THE LARYNGOSCOPE, we were enthusiastic about the publication of this splendid series and unstinted in our praise of both publisher and authors. This former series comprising sections 1, 2 and 3 of the anatomy of the head and neck, while general in character, was of more than usual interest to the ear and throat specialist because of its explicit topography and detailed anatomy of these areas.

Section 4, comprising the normal anatomy of the temporal bone and internal ear consisting of 36 stereograms contributed by Dr. F. E. Neres, former instructor in operative otology in the New York Post-Graduate Medical School and Hospital, has just been completed.

All we have said in praise of the former series can be but accentuated in this new collection which has been furnished the specialist with a remarkably complete collection of life-like stereoscopic specimens of the temporal bone and the anatomy of the internal ear with accompanying text, enabling him to study leisurely and to the best advantage these important anatomical areas.

The Neres collection of temporal bones illustrating every minute cavity and topography of the ear is believed to be one of the most complete collections of carefully prepared aural dissections to be found in the possession of any specialist.

This is the first production of an exhaustive anatomy of the temporal bone in stereoscopic photographs. We consider this series of such importance that we publish here a list of the 36 stereograms.

Temporal bone topography; external surface. Mastoid antrum opening; supra-meatal square (Neres). Simple mastoidectomy; operation for acute mastoiditis. (Schwartz-Zaufal). Radical mastoidectomy; operation for mastoiditis, following chronic suppurative otitis media. (Schwartz-Stacke). Meato-mastoid operation; operation for the cure of chronic suppurative otitis media with necrosis. (Stacke). Relation of mastoid antrum to mastoid process, posterior view. Descending portion of lateral sinus; inferiorly placed. Antral tegmen abnormally low and bulbous knee of sinus. Abnormally large tip cell; inferior view. Course of the descending and transverse facial canal. Relation of lateral sinus bulb to descending facial canal. Mastoidectomy; danger localities. Relation of descending and transverse facial nerve to horizontal or external semi-circular canal and oval window. Section through annular ring, mastoid antrum and process. Vertical section; inverse tympanic view. Ossicular relation to aditus ad antrum. Vertical transverse section through tympanum and mastoid process. Posterior tympanic wall relation, No. 1. Posterior tympanic wall relation to facial canal and mastoid antrum, No. 2. Relation of ossicular chain to tympanum and mastoid antrum, superior view. Relation of ossicles to vestibule of cochlea; perpendicular section. Ossicular relation to tympanum; tympanic view. Ossicular relation to annular ring; inverse view. Relation of vestibule to internal auditory canal; inferior view. Ossicular relation to cochlea; tympanic view. Relation of semi-circular canals to tympanum, ossicles and mastoid process. Relation of external semi-circular canal to Fallopi canal. Relation of external and superior semi-circular canals to aditus and Fallopi canal. Relation of semi-circular canals to floor of mastoid antrum. Cochlea relation to semi-circular canals; superior view, No. 1. Cochlea relation and semi-circular canals; superior view, No. 2. Cochlea relation to internal auditory canal and semi-circular canals; internal view. Semi-circular canal relation to aqueductus cochlea and internal auditory canal; posterior view. Cochlea relation to posterior tympanic wall. Cochlea relation to ossicles and mastoid antrum; su-

perior view. Cochlea relation to internal auditory canal and vestibule; horizontal section.

Every active ear surgeon who fails to secure this series of stereograms will lose one of the best opportunities of acquiring an unusually practical accessory to his work.

Diseases of the Ear, Nose and Throat. For the Family Physician and the Undergraduate Medical Student.

By HENRY OTTRIDGE REIK, M. D., Associate in Ophthalmology and Otolaryngology in the Johns Hopkins University. Assisted by A. J. Neilson Reik, M. D., Surgeon in the Baltimore Eye, Ear and Throat Hospital, Baltimore. Cloth Price, \$3. Pp. 374, with 81 illustrations. New York: D. Appleton & Co., 1911.

This work is prepared according to the statement of the author "especially to meet the needs and requirements of the practicing family physician and undergraduate medical student. It contains all the general physician needs to know about the affections of these special sense-organs and no more than he may reasonably be expected to know."

It is interesting to the reviewer to observe in the perusal of this work just what the author considers necessary for the general physician to know about the affections of the ear, nose and throat. We feel that if these ideal general practitioners were thoroughly conversant with the contents of this volume they would be fairly competent ear, nose and throat specialists. It certainly required considerable skill and careful discrimination to select the proper subject-matter to realize the necessities which the author intends to meet.

The series of illustrations of the anatomy of the ear, nose and throat is unusually good. The text is terse and well written, and is free from all cumbersome details and references.

Nasal Neuralgia. J. BROECKAERT. *Ann. des Mal. de l'Oreille, du Larynx, du Nez et du Pharynx*, No. 1, 1911.

Under nasal neuralgia Broeckaert classifies all pain without a manifest origin. Because of the intolerable intensity of the pain the author recommends surgical interference if no other remedy seems possible. The author mentions and details the anatomy of the nerves which may be affected—the external and internal nasal nerves and those of Meckel's ganglion. The nerve must be not only dissected, but cut out, as far as possible, to prevent a recurrence. Broeckaert reports four cases in which he excised the nasal nerves. However, in three cases, the trouble was not really nasal neuralgia, but neuralgia of the second trigeminal nerve, which was relieved by excision of the entire ganglion.

Ed.

